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OIL SHALE BRANCH

Mr. Robert Elderkin
Oil Shale Projects Office
USDI - Bureau of Land Management
131 N. 6th Street, Suite 300
Grand Junction, CO 81501

Dear Mr. Elderkin:

We are sending you a copy of Volume I of the Cathedral Bluffs' final application for a Major Development Permit submitted to Rio Blanco County November 21, 1983.

We are not including Volume II of this application which contains technical backup from the CITF model runs. This volume is available in our office for your perusal should you be interested in those details.

If you have any questions on this matter, please contact me.

Very truly yours,

CATHEDRAL BLUFFS SHALE OIL COMPANY

R.E. Thomason

R. E. Thomason
Vice President
Regulatory Affairs

RET/pmr

Attch.

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Occidental Oil Shale, Inc., Partner (303)244-3000 Tenneco Shale Oil Company Partner

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1.0 EXECUTIVE SUMMARY

1.1 DESCRIPTION OF THE APPLICANT

Cathedral Bluffs (CB) Shale Oil Company (the Applicant) is a general partnership organized under the Uniform Partnership Act as adopted in the State of Colorado of Occidental Oil Shale, Inc., a California corporation, and Tenneco Shale Oil Company, a Delaware corporation. The parent corporations of the respective partners are Occidental Petroleum Corporation (for Occidental Oil Shale, Inc.), and Tenneco, Inc. (for Tenneco Shale Oil Company).

The address of Cathedral Bluffs is:

P. O. Box 2687
Grand Junction, Colorado 81502

Telephone: (303)244-3000

The C-b site mailing address is:

Star Route
Rifle, Colorado 81650

The official directly responsible for construction and operation of the additional components described in this permit application is Mr. J. B. Phillips, President.

1.2 PROJECT SUMMARY

1.2.1 PROJECT LOCATION

The Project described in this Major Development Permit application consists of an oil upgrading facility and an on-site housing facility (mancamp) to be constructed as part of the overall CB Shale Oil Project. Federal Oil Shale Lease Tract C-b is located in the Piceance Creek Basin in Rio Blanco County approximately 40 miles from the towns of Meeker and Rifle and 65 miles from Rangely. The Tract of approximately 5100 acres is located in Township 3 South; the Range 96W/97W boundary approximately bisects the Tract. Piceance Creek runs nearly parallel to the Tract roughly one mile to the north.

1.2.2 OIL UPGRADING FACILITIES

The oil upgrading facilities (OUG) will be designed to process 13,260 barrels per calendar day of raw shale oil produced from aboveground retorting (AGR) and modified-in-situ (MIS) facilities to produce 14,100 barrels per calendar day of syncrude. The OUG facilities consist of four major units; the Hydrogen Unit, the Hydrotreating Unit, the Sour Water Treating Unit, and the Sulfur Recovery Unit.

1.2.3 ON-SITE HOUSING FACILITY (MANCAMP)

An 850 unit on-site housing facility is planned which will consist of two components. The first consists of a combination of recreation vehicle (RV) spaces and mobile, motel-type living quarters situated on RV sites, for a total of up to 350 units. The second component includes 500 modular, motel-style units.

A two-phased construction effort is planned. Phase I will involve the design, permitting and construction of the recreational vehicle/mobile motel-type unit component, as well as the infrastructure for the total 850 unit housing complex. Phase II will include procurement and setting in

place of up to 500 motel-style units and support facilities. Development of the on-site housing complex will be initiated during the 4th quarter, 1983 and will be completed in the 1st quarter, 1985. Construction will proceed to allow occupancy of the units on an as needed basis.

The CB Project will retain a management firm to provide housekeeping, catering, security, maintenance, fire protection and emergency medical services to the occupants of the mancamp. The security force will coordinate its activities with the Rio Blanco County Sheriff's Department.

Only persons employed full-time at the Project site will be allowed to reside in the on-site housing. No children will be allowed.

1.3 PROJECT SCHEDULE

Milestone dates associated with the Project schedule are outlined below. Emphasis is placed on those elements which are the subject of this application.

1984	Start Material Handling Facilities Development
1984	*Start* Above Ground Retort and *Oil Upgrading Facilities Development*
1984	*Begin Construction of On-site Housing*
1985	Start Modified In-Situ Surface Process Facilities Development
1985	*Occupancy of Recreational Vehicle Modular Unit*
1986	Surface Retort Facilities Completed
1986	*Occupancy of Motel-Style Housing Complex*
1987	Aboveground Retort Startup
1987	Ventilation/Escape (V/E) Shaft Equipped and Fully Operational
1987	*Start-up of Oil Upgrading Facility*
1988	Ignite First Modified In-Situ Retort
1989	Above Ground Retort Steady-State Production
1989	Modified In-Situ Retorts Full Production
1989	*Oil Upgrading Facility Steady State Production*

1.4 SOCIOECONOMIC ANALYSIS - SUMMARY

The socioeconomic analysis has been prepared in a format which considers two very different potential development scenarios for Garfield County. These scenarios are dependent upon the level of development associated with the Union Oil Company Parachute Creek Project. The level at which this Project is to be developed is as yet uncertain so the analysis addresses a baseline scenario with the Union Project at an approximate 10,000 barrels per day (BPD) rate of production, and a baseline scenario with the Union Project at an approximate 90,000 BPD rate of production. At the time of this writing, no firm plans for additional construction had been announced by Union Oil, and thus the analysis included in the main body of this application features the 10,000 BPD production level. A separate analysis, based upon the 90,000 BPD level of development is contained in Volume II, Appendix 6.

1.4.1 CURRENT SOCIOECONOMIC CONDITIONS

Employment and population have experienced a decline within Western Colorado over the past 18 months. This decline is due to the national economic recession combined with a decline in oil shale and related energy industries.

Public facilities and services within Eastern Rio Blanco County and Western Garfield County (Study Area) generally have substantial capacity to accommodate increased population. This excess capacity is a result of the numerous expansions which have been undertaken over the past 5-6 years in anticipation of growth.

1.4.2 DEMOGRAPHIC ANALYSIS

The development of the Project will have a demographic effect upon Rio Blanco, Garfield and Mesa Counties, with the most significant effect upon jurisdictions in Eastern Rio Blanco and Western Garfield Counties.

The labor force requirements of the CB Project will resemble most large industrial projects; requiring a large number of construction workers over

a relatively short period of time, and a permanent operating workforce which will build up during the construction period and stabilize once full production levels are reached. Figure 1.4-1 is a graphic display of the anticipated build-up of the construction and operations workforce. A peak employment of approximately 2900 will be reached in the third quarter of 1986. After that time, construction employment will decrease rapidly toward the targeted completion of Project construction in late 1988. The permanent operations workforce will be about 1020 employees.

During the construction stage of the Project up to 850 construction employees are expected to reside in the temporary housing facilities to be provided at the Project site. This level of occupancy should only last three or four months during 1986. The remainder of construction employees are expected to reside in Garfield County (80%), Rio Blanco County (15%) and Mesa County (5%). Permanent Project employees are expected to place more emphasis on residing closer to the site, thus 25% are projected to reside in Rio Blanco County and 75% are projected to reside in Garfield County, primarily in the communities of Meeker and Rifle.

A summary of the effect upon total employment and total population within Rio Blanco and Garfield Counties is displayed in Table 1.4-1. As indicated, the CB Project is projected to generate 4220 new jobs and a population increase of 5730 in the two counties during the peak of construction activity in 1986. Once steady-state operations are achieved, a total employment increase of 2410 and a population increase of 3850 in the two counties is expected to be attributable to the Project.

TABLE 1.4-1

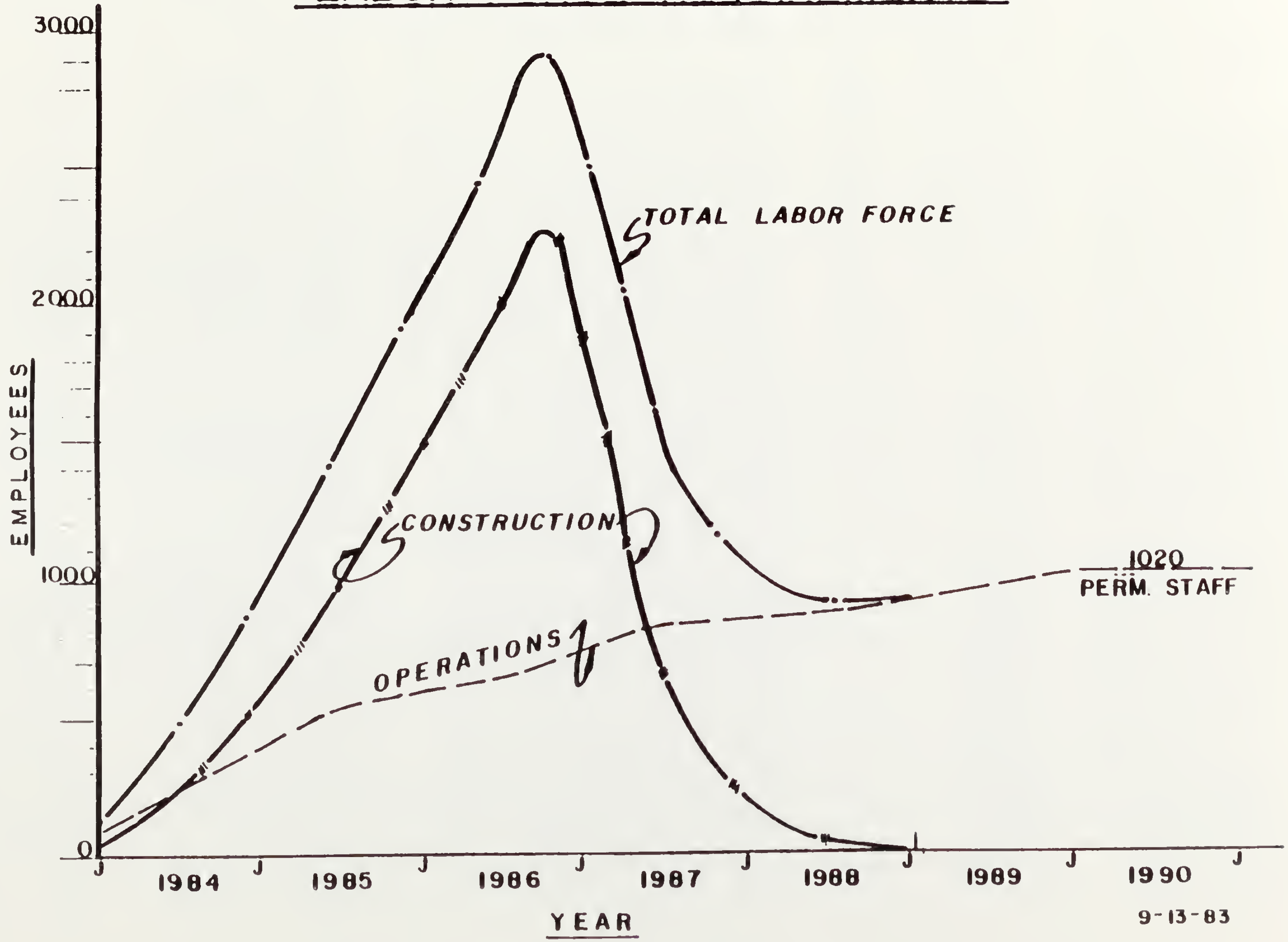
SUMMARY OF CB PROJECT DEMOGRAPHIC IMPACTS

	Rio Blanco County		Garfield County	
Year	Project-Related Employment	Project-Related Population	Project-Related Employment	Project-Related Population
1984	160	220	330	260
1985	910	1290	1390	1070
1986	1320	2010	2900	3720
1987	1160	1700	2440	2990
1988	670	1260	2050	2750
1989	520	1130	1920	2770
1990	500	1040	1910	2810

Source: Tables 3.2-11, 3.2-13, 3.2-14, 3.2-16.

FIGURE 1.4-1

CATHEDRAL BLUFFS SHALE OIL PROJECT
LABOR FORCE REQUIREMENTS



1.4.3 LOCAL ECONOMIC IMPACT ANALYSIS

The CB Project is projected to increase total personal income substantially in Rio Blanco and Garfield Counties. Personal income in both counties is projected to be $100 million higher in 1986 during the height of construction activity; and to maintain an annual level $85 million higher than it would be without the Project, once steady-state operations begin.

The infusion of additional income into the local economy will strengthen the local business sector which is currently suffering from a period of over-expansion in 1980-1981.

1.4.4 FISCAL IMPACT ANALYSIS

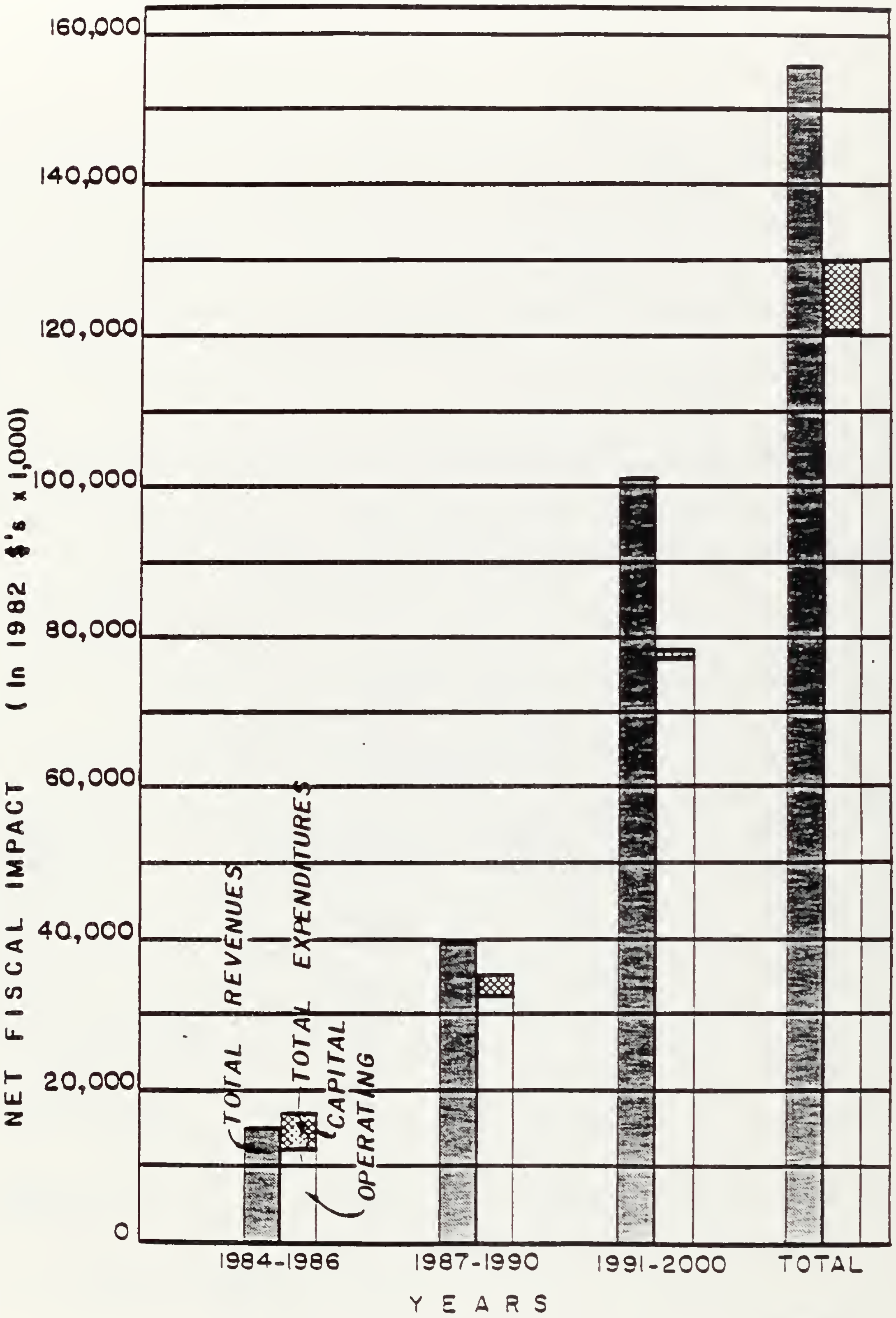
As indicated in Figure 1.4-2, the CB Project is projected to result in an increase in total public sector revenues which exceeds the total increase in public sector costs associated with the Project. Figure 1.4-2 is a summation of the annual revenue/expenditure balances calculated for each of the 16 local government jurisdictions in the Project area. Most jurisdictions are projected to derive long-term fiscal benefits as a result of the CB Project. However, annual fiscal deficits are projected for some jurisdictions in the initial years of Project development due to the inability of public revenue to keep pace with increasing operating costs and necessary capital expenditures.

From the standpoint of mitigation, the combination of monies remaining from the Oil Shale Trust Fund (OSTF) and the anticipated increase in property tax base is more than adequate to finance fiscal shortfalls in most jurisdictions. Five of the seven jurisdictions in Rio Blanco County will receive a substantial increase in property tax base due to the inclusion of the Project.

Garfield County jurisdictions will benefit from revenues available from the Oil Shale Trust Fund to offset a portion of their expansion costs associated with the CB Project. This is particularly true of the Garfield RE-2 School District. Other Garfield County jurisdictions including the Grand

FIGURE 1.4-2

FISCAL ANALYSIS SUMMARY



Prepared by:
CRANE B ASSOCIATES

River Hospital District, the Grand Valley School District and Garfield County, will receive a substantial increase in property tax base from the Union Oil Company Parachute Creek Oil Shale Project. This increased tax base, combined with some excess capacity in existing facilities, should allow these jurisdictions to offset the costs of additional growth. Those Garfield County jurisdictions without access to Oil Shale Trust Fund monies or access to a natural resources tax base are projected to experience the greatest difficulty in offsetting the costs of growth. These include the Town of Parachute, the Rifle Rural Fire District, and to a lesser degree, the City of Rifle and the Town of Silt.

1.4.5 HOUSING IMPACT ANALYSIS

Current statistics indicate that over 1350 housing units and 636 mobile home spaces are available on a rental basis within a 75-mile driving distance from the CB Project. Table 1.4-2 is a breakdown of total housing units and vacancies by housing type.

TABLE 1.4-2

PROJECT AREA VACANT HOUSING UNITS
MID-1983

Type of Dwelling	No. of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	4,687	224	4.8
Duplex	171	43	25.1
Multi-Family	2,373	742	31.3
Townhome/Condominium	332	93	28.0
Mobile Homes	1,130	271	24.0
Mobile Home Spaces	1,271	636	50.0
TOTAL	9,964	2,009	20.2

Sources: Valeu & Associates, Inc.
Cathedral Bluffs

The CB Project anticipates a need for a total of 2050 housing units for Project employees during the peak of construction activities in 1986. Up to 850 of these units will be provided as temporary housing at the Project site. At steady state operation a total of 1540 housing units are required for Project-related and induced population. This housing will be available primarily from existing units supplemented by some new construction.

1.4.6 TRANSPORTATION IMPACT ANALYSIS

The principal highway transportation arteries utilized by the CB Project for the transport of employees and construction materials will be Colorado Highway 13 between Rifle and Meeker, and the Piceance Creek Road from Rio Blanco to the Project site. Interstate 70 both east and west of Rifle will also be utilized as the primary highway access from outside the region.

TABLE 1.4-3

TRANSPORTATION IMPACT SUMMARY
1990/2000

Roadway Segment	Roadway Design Capacity (ADT)	Baseline Traffic Volume Projection (ADT)	CB Project Related Traffic Volume Projection (ADT)	Total Traffic Volume Projection (ADT)
Colo.Hwy. 13 Rifle-Rio Blanco	3215	2480/2580	280	2840/2940
Colo.Hwy. 13 Rio Blanco-Meeker	3215	2210/2310	50	2380/2480
Piceance Cr. Rd. Rio Blanco-CB Site	3215	424/440	330	770/780

Source: CB Project Estimate

Table 1.4-3 displays the Average Daily Traffic (ADT) projected for the three key local highway segments both with and without the development of the CB Project. As is indicated in Table 1.4-3, the development of the Project will not result in exceeding the design capacity of these roadways. The roadway segment which is expected to most closly approach design capacity is Colorado Highway 13 from Rifle to Rio Blanco. Railroad facilities will be utilized to ship some materials in to the Project area for off-loading near Rifle, but this will not significantly affect total railroad traffic.

1.5 SOCIOECONOMIC MITIGATION PLAN-SUMMARY

1.5.1 HOUSING

The CB Project will initiate a housing program designed to utilize existing vacant housing to the greatest extent possible. Construction of new permanent housing will be encouraged only when there exists a long-term demand.

To supplement existing housing stock, and avoid over building, CB will develop on-site housing to accommodate a portion of the construction workforce. The on-site housing will consist of a 350-unit combination recreational vehicle park and mobile, motel-style unit facility, and 500 modular motel-type units with dining facilities and other amenities.

In addition to the on-site facility, an essential element of the housing program is the housing available in the Battlement Mesa/Parachute area for use during the construction period. Up to 640 housing units in Battlement Mesa/Parachute are anticipated to be utilized by Project employees from 1985-1987, with the majority of these units expected to continue to be utilized by in-migrating induced workers when Project construction is completed.

CB will master lease approximately 200 rental units in Rifle and Meeker for key construction employees as transitional housing. The latter use is primarily to assimilate permanent operations employees into the two communities as quickly as possible.

The Project expects a need for up to 800 additional permanent housing units to be constructed in Rifle and Meeker to house operations employees on a permanent basis. CB will work with local builders to insure that these housing units are in place as they are required.

A housing office will be maintained to service employees, and to provide up-to-date information on housing conditions in the Project area.

1.5.2 EMPLOYEE TRANSPORTATION

The Project will utilize buses to transport the great majority of employees during Project construction. Daily transportation will be provided from Meeker, Rifle and Battlement Mesa/Parachute to the site. In addition, bus transport will be available to residents of the on-site housing to the construction area, and for recreational access to nearby communities.

It is anticipated that approximately 90 percent of construction employees and 75 percent of operations employees will be transported to the site by bus through 1988. After construction activity is completed the employee transportation program will be re-evaluated to determine the most practical form of transportation for permanent employees over the extended term.

1.5.3 LOCAL GOVERNMENT FISCAL IMPACT

The CB Project will work directly with those local government entities which may experience adverse fiscal effects as a result of the Project. This effort will include:

1. Providing technical assistance to local governments in identifying potential budgetary shortfalls and structuring revenue raising programs to take advantage of local economic growth.

2. Providing technical assistance to local government in comprehensive planning and growth management.

3. Providing local government with additional financial expertise in structuring short and long-term financial programs.

4. Providing limited direct financial assistance to public sector programs which are unable to attract financing from other sources.

5. Providing current information through the Project-sponsored socio-economic monitoring program and regular meetings with local government officials which will enable local governments to anticipate changes in fiscal conditions.

1.5.4 SOCIOECONOMIC MONITORING PROGRAM

An extensive socioeconomic monitoring program will be sponsored by the Project. The data collected through this monitoring program will provide a means for validating the assumptions made in the Project socioeconomic analysis and for tracking the effectiveness of the mitigation program. The monitoring program will collect and analyze data in the areas of housing, workforce characteristics, local economic indicators and local government fiscal condition on a semi-annual basis throughout the Project construction period. The monitoring reports will be provided to local government agencies and will be available to other interested parties upon request.

1.6 ENVIRONMENTAL MITIGATION - SUMMARY

Projected environmental impacts and proposed mitigation of these are treated in detail in the Detailed Development Plan submitted to the U.S. Department of Interior pursuant to the Oil Shale Lease for Tract C-b. The sum total of development-related impacts are within the realm of those associated with any large project, and do not pose a significant threat to the air, water, or land resources of Rio Blanco County.

1.7 STATUS OF REQUIRED PERMITS AND APPROVALS - SUMMARY

All permits required to commence construction of the CB Project have been obtained. Those needed to complete construction and operate the Project, including the Major Development Permit for the oil upgrading facility and on-site housing, have been identified and scheduled in accord with the CB Master Project Schedule.

2.1 LOCATION OF THE C-b LEASE TRACT

2.0 PROJECT DESCRIPTION

2.1 LOCATION OF THE C-b LEASE TRACT

Federal Oil Shale Lease Tract C-b is located in a sparsely populated region known as the Piceance Creek Basin in Rio Blanco County in northwestern Colorado. The Tract consists of nearly 5,100 acres of federally-owned land situated approximately 40 miles from the towns of Meeker and Rifle, and 65 miles from Rangely (see Figure 2.1-1). Ownership of lands adjacent to the C-b Tract is shown on Figure 2.1-2. Table 2.1-1 provides addresses of adjacent property owners. A topographic map of the Tract is shown on Figure 2.1-3. The legal description of the site is as follows:

Township 3 South, Range 96 West, 6th Prime Meridian

Section 5, W1/2 SE1/4, SW1/4; Sec. 6, Lots 6 and 7, E1/2 SW1/4, SE1/4; Sec. 7, Lots 1, 2, 3, 4, E1/2 W1/2, E1/2; Sec. 8, W1/2 NE1/4, NW1/4, S1/2; Sec. 9, SW1/4; Sec. 16, NW1/4, W1/2 SW1/4; Sec. 17; Sec.18, Lots 1, 2, 3, 4, E1/2 W1/2, E1/2.

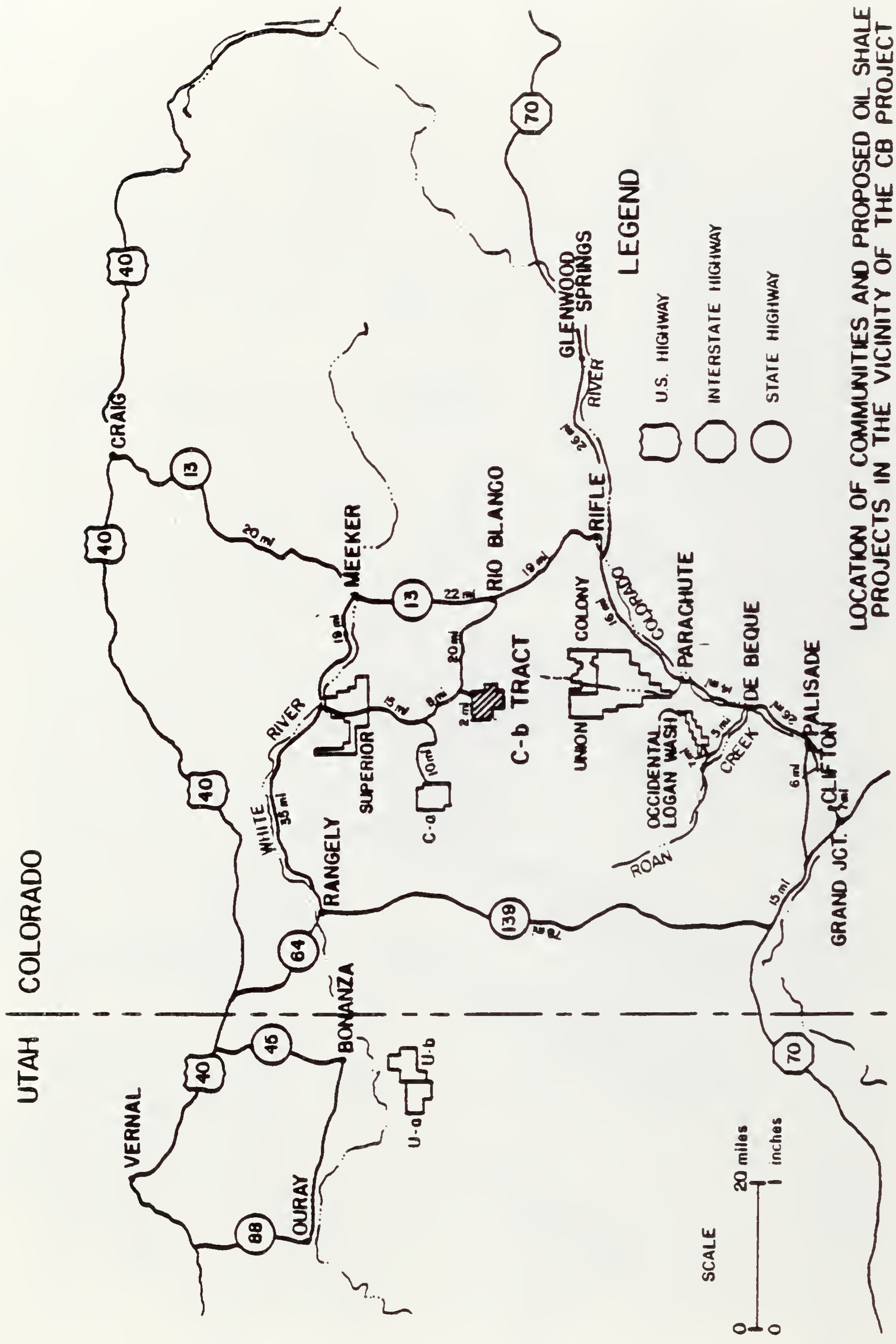
Township 3 South, Range 97 West, 6th Prime Meridian

Sec. 1, S1/2; Sec. 2, SE1/4; Sec. 11, E1/2; Sec. 12; Sec. 13, N1/2; Sec. 14, N1/2 NE1/4.

The following items which describe the physical conditions and project site prior to development are found in both the 1976 Detailed Development Plan and/or the 1977 Final Baseline Report for the C-b Tract:

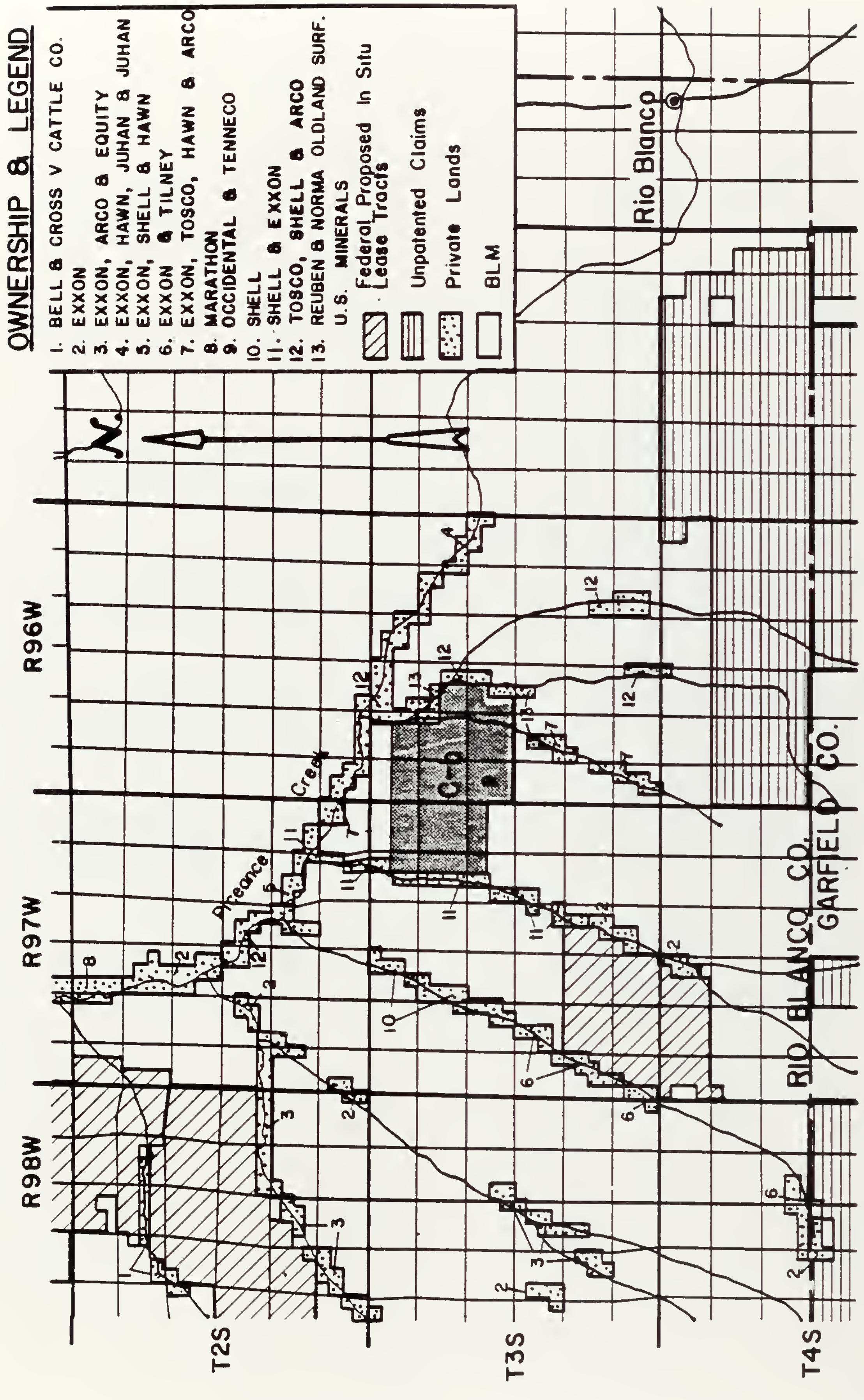
1) topography;
2) soil types;
3) surface and groundwaters;
4) erosion and runoff control during a 100-year flood;
5) drainage conditions
6) vegetation patterns;
7) wildlife;
8) geological characteristics;

FIGURE 2.1-1



LOCATION OF COMMUNITIES AND PROPOSED OIL SHALE PROJECTS IN THE VICINITY OF THE CB PROJECT

FIGURE 2.1-2



OWNERSHIP ADJACENT TO C-b TRACT

TABLE 2.1-1

ADDRESSES OF ADJACENT LAND OWNERS

1. Bell & Cross V Cattle Company
Attn: B. E. Nelson
600 Broadway, Suite 530
Denver, CO 80203

2. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

3. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

4. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

5. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

6. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

7. Exxon Company, U.S.A.
P.O. Box 2180
Houston, Texas 77001

8. Marathon Oil Company
7400 S. Broadway
Littleton, CO 80122

9. Occidental Petroleum Corp.
10889 Wilshire Builevard
Los Angeles, CA 90024

Tenneco Shale Oil Company
P. O. Box 2511
Houston, Texas 77001

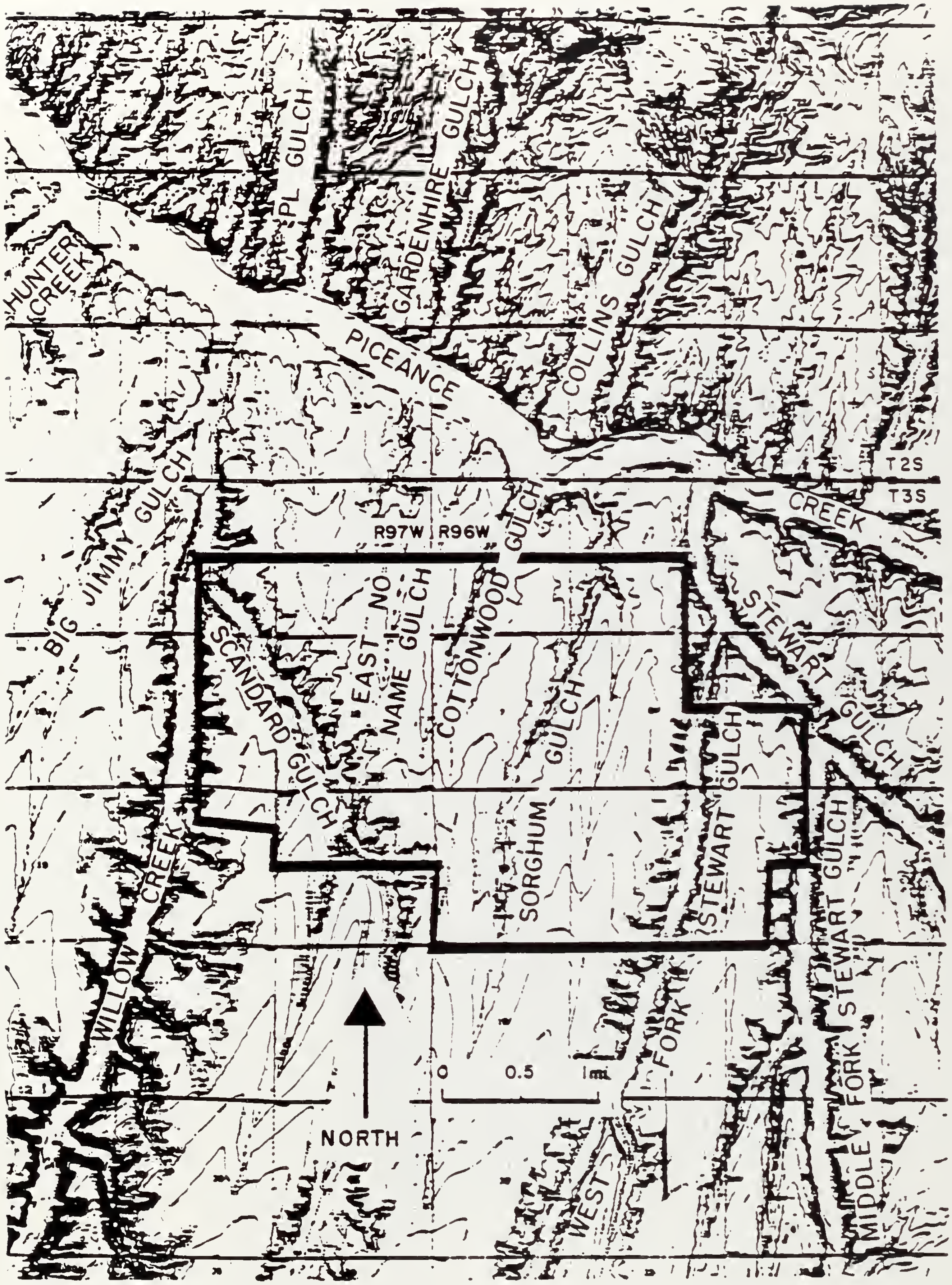
10. Shell Oil Company
1700 Broadway, Suite 850
Denver, CO 80202

11. Shell Oil Company
1700 Broadway, Suite 850
Denver, CO 80202

12. TOSCO Corporation
P.O. Box 441464
Aurora, CO 80014-1439

13. Reuben & Norma Oldland
Spur Ranch
Star Route, Piceance Creek
Rifle, CO 81650

FIGURE 2.1-3



TOPOGRAPHIC MAP OF C-b TRACT

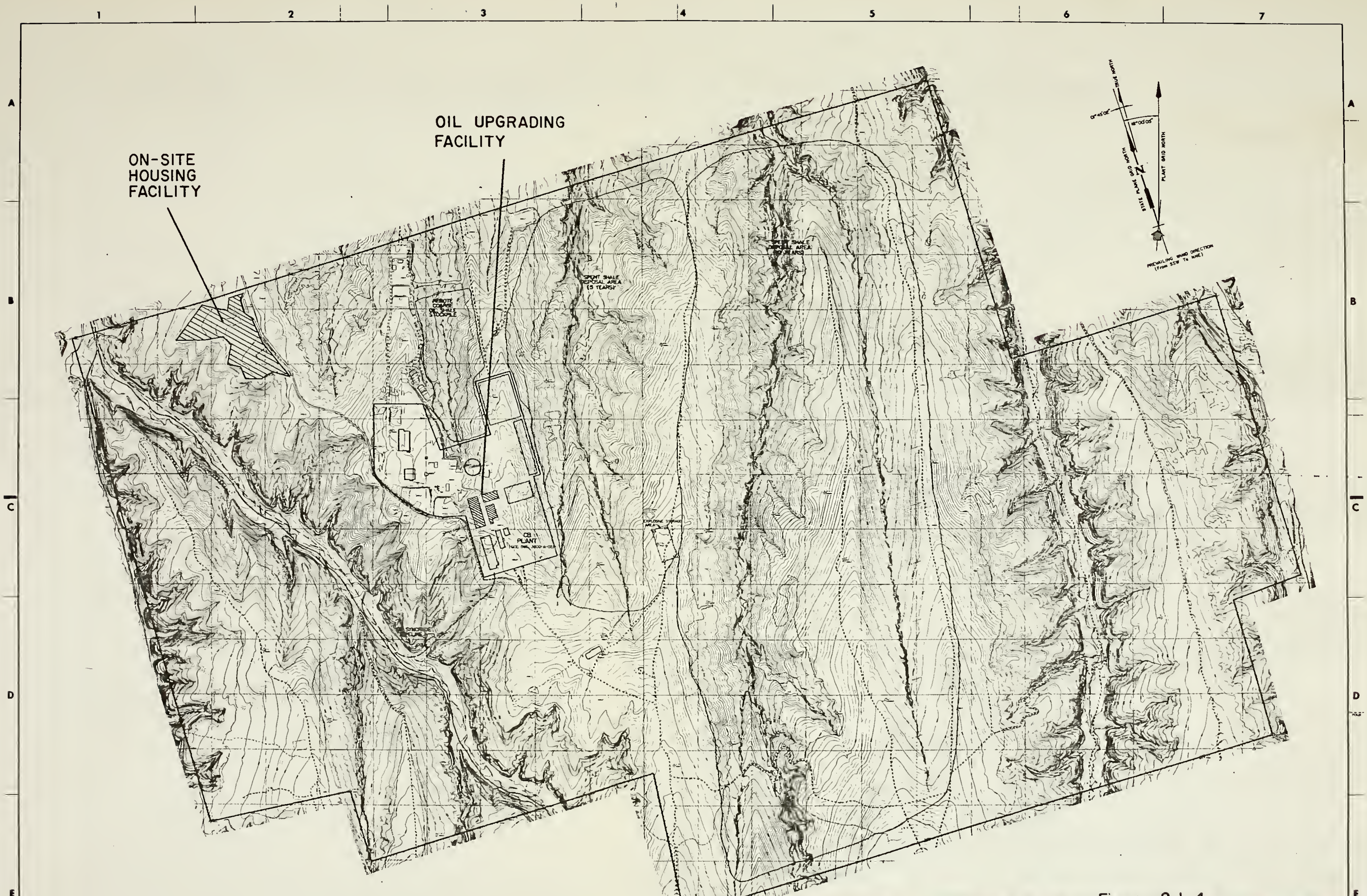


Figure 2.1-4

THESE DRAWINGS WERE COMPILED USING AERIAL METHODS AND PHOTOGRAPHY TAKEN ON AUG 27, 1980

GROUND SURVEY CONTROL BY CONSTRUCTION SURVEYS, INC. RIFLE, COLORADO.

PHOTOGRAMMETRIC SERVICES BY SCHAAF AND ASSOCIATES, DENVER, COLORADO

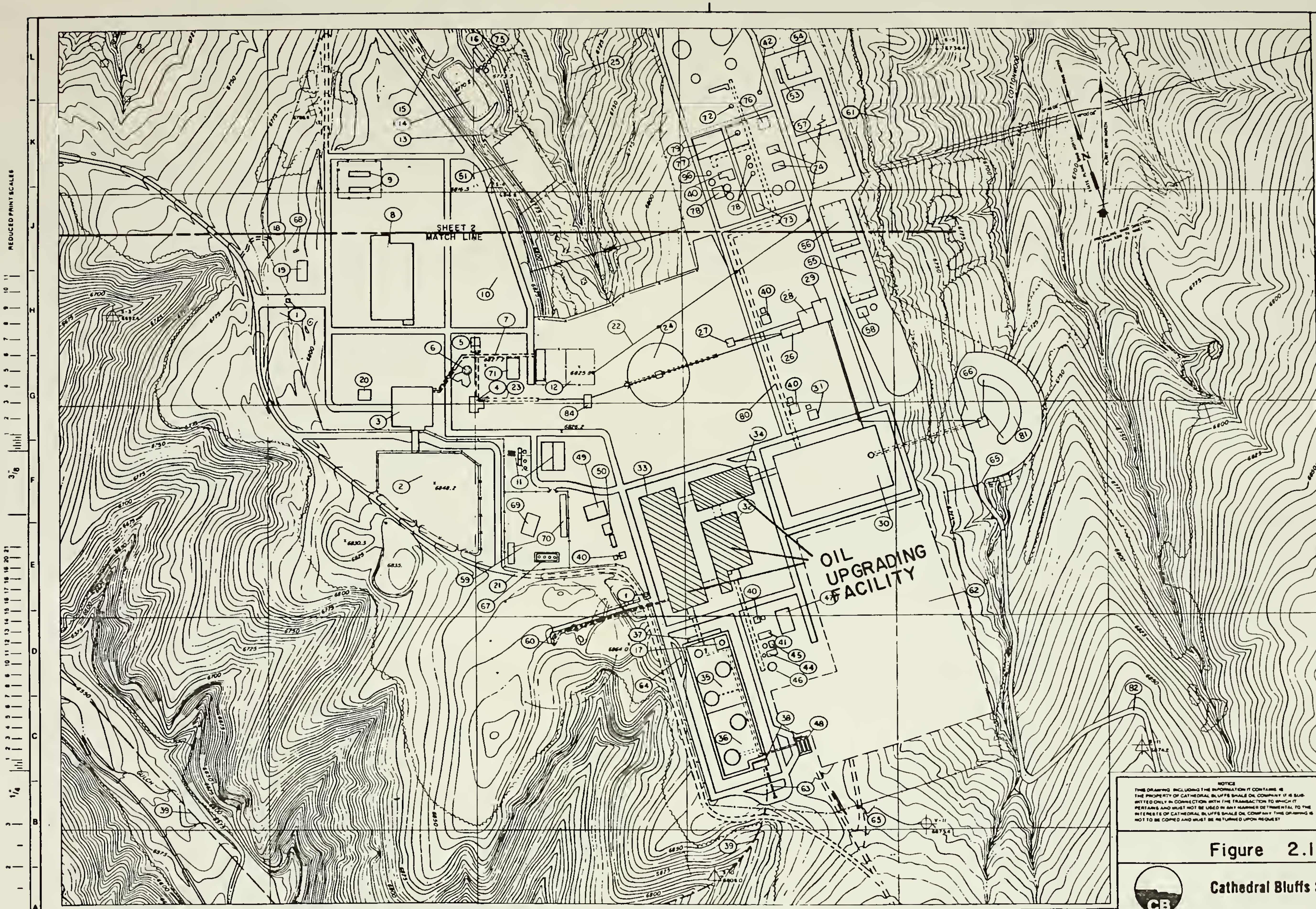
REV	DESCRIPTION	DRAWN	DATE	CHK'D	APP'D
2	TO REFLECT CASE B7A DESIGN	GAB			
1	GENERAL REVISION				

APPROVALS
12/20/80
12/10/81
12/20/81
11/20/81

Cathedral Bluffs Shale Oil Company

TITLE
PLOT PLAN
OVERALL C-b TRACT

PROJECT No.
SCALE NOTED
DRAWING No. 3500-A-01M
REV 2



LEGEND

1. CB Plant Entrance Gate
2. Parking Area
3. Change House
4. Production Headframe
5. Service Headframe
6. Mine Air Intake & Heating Structure
7. Utility Tunnel
8. Warehouse & Main Shop
9. Warehouse Covered Storage
10. Mine Support Staging Area
11. Concrete Batch Plant
12. CB Plant Main Substation
13. Mine Support Area Sanitary Treatment Facility
14. Pond B
15. Pond A
16. Mine/Firewater Pump House
17. Diesel Fuel Storage
18. Natural Gas Supply Bldg.
19. Generator Building
20. Control Laboratory
21. Public Road
22. Relocated 138 kv Power Line
23. Conveyor Tunnel
24. Local Coarse Oil Shale Stockpile
25. Remote Coarse Oil Shale Stockpile
26. Coarse Oil Shale Crushing Building
27. Oil Shale Transfer Station & Sampler
28. Oil Shale Feed Storage Silo
29. Oil Shale Final Screening & Fine Ore Bin
30. Aboveground Retorting Facilities
31. Cooling Water Tower
32. Hydrogen Unit
33. Hydrotreating Unit
34. Sour Water Treating Unit & OOG Sulfur Recovery Unit
35. Raw Shale Oil Tank Farm
36. Syncrude Tank Farm
37. Tank Farm Pump Pad
38. CB Syncrude Pipeline Pump Station
39. CB Syncrude Pipeline
40. Electrical Substations
41. Plant Air Compressors
42. MIS Emergency Vent Stack
43. Spare
44. Water Treatment Chemical Storage
45. Water Treatment Building
46. BFW & Water Treatment Storage
47. Process Central Control Rm.
48. Ammonia Storage Vessels
49. Process Satellite Shop/ Warehouse
50. Fire Station
51. Fire/Minewater Storage Pond
52. Spare
53. Process Plant Sanitary Sewer Treatment Facility
54. Revegetation Water Pond
55. Blowdown Pond
56. Oily Water Pond
57. Storm Water Ponds
58. API Separator
59. Mobile Equipment Storage Yard
60. Process Emergency Flare
61. Spent Shale Disposal Area
62. Future Process Expansion/ Laydown Area
63. Syncrude Truck Loading
64. Truck Scales (Relocated)
65. Unmanned Gates
66. Spent Shale Wetting Facility
67. Automotive Fuel Storage
68. Propane Storage
69. Lubrication Storage
70. Mobile Equipment Sheds
71. Satellite Shop
72. MIS Offgas Shaft
73. MIS Control Room
74. MIS Steam Generation Facilities
75. Minewater Filtration System
76. MIS Offgas Compression System
77. MIS Offgas Contact Condenser
78. MIS FGD Facilities
79. MIS Offgas Processing System
80. Pipeways
81. Spent Shale Stockpile Area
82. Spent Shale Disposal Haul Road
83. Spare
84. Coarse Oil Shale Transfer Station & Truck Load-out
96. Foul Water Stripping Unit

NOTICE
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Figure 2.1-5

Cathedral Bluffs Shale Oil Company

PLOT PLAN CB PLANT
(SHEET 1)

G.K. BLECHA
12/20/82
12/20/82
12/20/82
12/20/82
NONE
3500-A-02M
1

MK	DATE	REVISIONS	APP
	7/84	TO REFLECT CASE B-7-A DESIGN	

NUMBER
REFERENCE DRAWINGS

9) archaeological and historic resources;
10) existing roads and structures;
11) water resources;
12) current land use of project site.

2.1.1 OIL UPGRADING FACILITY SITE

The overall plot plan for the C-b Tract is shown on Figure 2.1-4, locating the CB Plant on the Tract. A detailed plot plan is given on Figure 2.1-5 which includes a facilities list. Facilities numbered 32-34 are the following Oil Upgrader (OUG) facilities:

#32	Hydrogen Unit
#33	Hydrotreating Unit
#34	Sour Water Treating Unit and Sulfur Recovery Unit,

which have been highlighted on both plot plans. These functions are described in Section 2.2.1.

2.1.2 ON-SITE HOUSING FACILITY

The approximate 40 acre site to be used as an on-site housing facility is located in the northwest portion of the C-b Lease Tract, as shown in Figure 2.1-4. The housing facility area is approximately one mile from the plant site and removed from any areas of major industrial activity. The housing site is adjacent to the main entrance to the lease tract for convenient access.

2.2 DESCRIPTION OF THE FACILITIES

2.2 DESCRIPTION OF THE FACILITIES

2.2.1 OIL UPGRADING FACILITIES

Union Oil's proprietary oil upgrading technology has been selected to hydrotreat the raw shale oil to produce a high quality syncrude which will meet specifications for pipelining and conventional refinery fuel. The Oil Upgrading (OUG) Facilities will be designed to process approximately 13,260 barrels per calendar day (BPCD) of raw shale oil produced from Aboveground Retorting (AGR) and Modified-In-Situ (MIS) Process Facilities and produce about 14,100 BPCD of syncrude. The syncrude will be transported to market by pipeline. Preliminary engineering is underway for a pipeline connection to the existing crude oil network near Rangely, Colorado. The pipeline routing and request for approval for consruction will be submitted under Rio Blanco County Special Use Permit regulations.

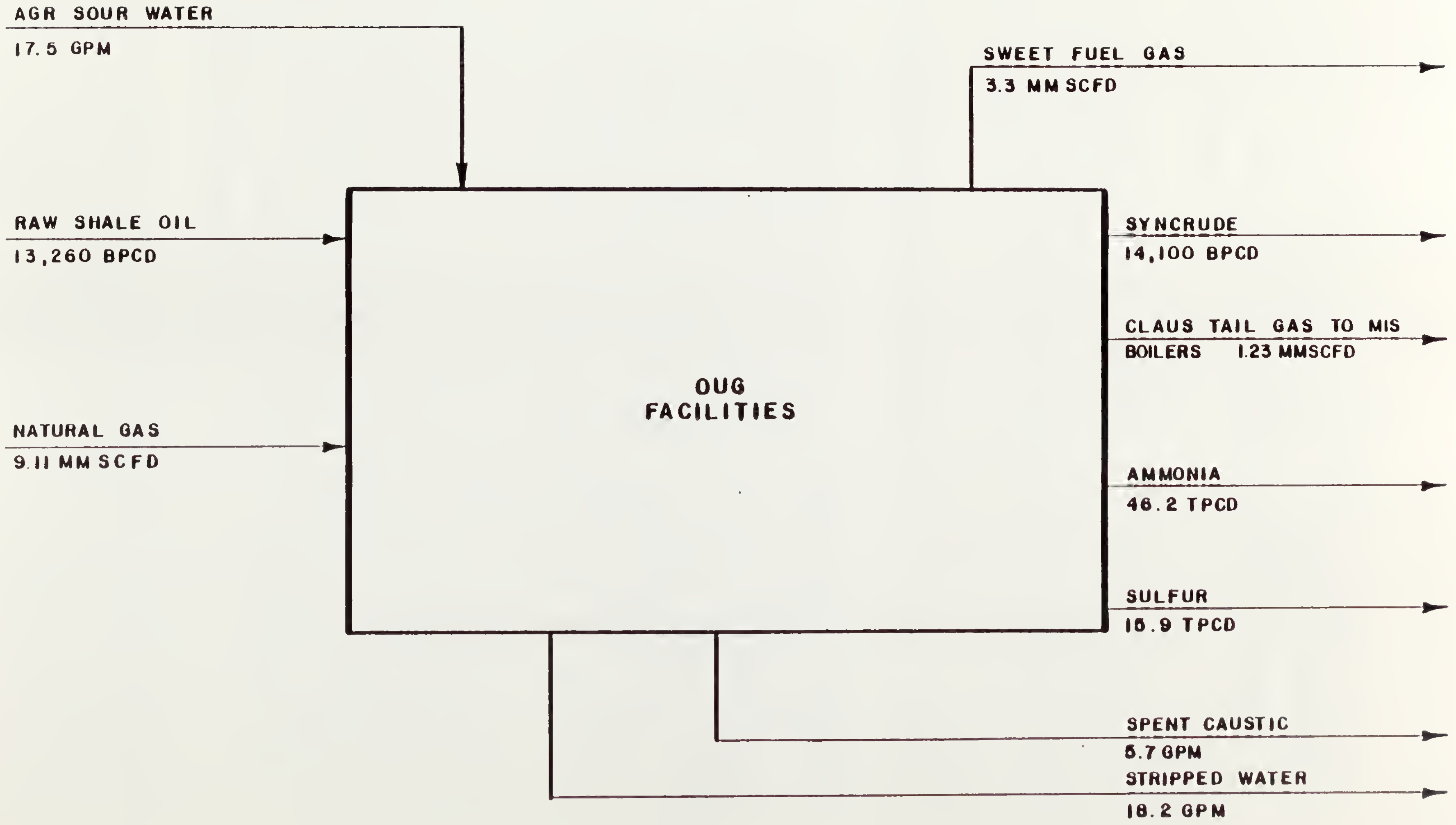
The Oil Upgrading Facilities will consist of four major units: Hydrotreating Unit, Hydrogen Unit, Sour Water and Sour Gas Treating Unit, and OUG Sulfur Recovery Unit. The overall block flow diagram for the OUG facilities is shown in Figure 2.2-1.

2.2.1.1 HYDROTREATING UNIT

The Union Oil proprietary oil upgrading technology will be used to hydrotreat the raw shale oil produced from the AGR and MIS Process Facilities. This process employs severe hydrotreating to yield a high quality syncrude with low levels of nitrogen, sulfur, and arsenic, which can be conveyed in existing pipeline networks and can be processed in existing refineries without extreme modifications.

The Hydrotreating Unit will produce sour water and sour gas, both of which will be treated in the Sour Water and Sour Gas Treating Unit. The sour water, after being treated, will be reused as washwater within the Hydrotreating Unit. The sour gas after treatment will be used as plant fuel gas.

FIGURE 2.2-1



OVERALL BLOCK FLOW DIAGRAM FOR OIL UPGRADING FACILITIES

2.2.1.2 HYDROGEN UNIT

The Hydrogen Unit will use natural gas as a feedstock to produce hydrogen for the Hydrotreating Unit. The Hydrogen Unit will employ a conventional steam-methane Reformer and Pressure Swing Adsorption (PSA) System to produce 99.9% pure hydrogen.

The Hydrogen Unit will also contain a Reformer waste heat recovery section to produce high pressure steam used within the process. A significant portion of the excess high pressure steam will be used to drive the natural gas compressor and meet a large portion of the steam demand in the sour water treating section.

2.2.1.3 SOUR WATER AND SOUR GAS TREATING UNIT

The sour water, containing large quantities of ammonia (NH_3) and hydrogen sulfide (H_2S) produced in in the Hydrotreating Unit, along with small quantities of sour water from AGR Facilities and OUG Sulfur Recovery Unit will be routed to a sour water stripper. In the stripper, the sour waters will be steam stripped to remove dissolved NH_3, H_2S, carbon dioxide (CO_2), and volatile dissolved organics. The stripped water will then be reused in the hydrotreating area as wash water and the remaining excess stripped water will be sent to other users within the plant.

The sour gases from the sour water stripper overhead will then be routed to a Phosam Unit, licensed by U.S. Steel Corporation. In the Phosam Unit, the ammonia from these sour gases will be removed by use of a lean phosphoric acid solution in a Phosam liquid absorber. The ammonia free sour gas will then be routed to the OUG Sulfur Recovery Unit for H_2S removal. The rich phosphoric acid will be regenerated for reuse, and the ammonia will be recovered as anhydrous ammonia for sale.

The sour gas from the Hydrotreating Unit will also be treated in a separate Phosam Gas Absorber to remove ammonia. The ammonia-free gas containing small quantities of H_2S will be sweetened by caustic wash. The sweet gas will then be sent to the Plant fuel gas system. The spent caustic will be routed to the cooling tower.

2.2.1.4 OUG SULFUR RECOVERY UNIT

The sour gases from the Phosam Liquid Absorber will be directed to a conventional Claus plant to convert H_2S into elemental sulfur. An overall H_2S removal of 97% will be achieved in this Unit. The Claus tail gas will be piped to the MIS boilers for incineration prior to being desulfurized in the Flue Gas Desulfurization Unit.

The molten sulfur from the condensors will be sent to storage. A small quantity of sour condensate condensed from the feed sour gas will be ducted to the Sour Water Treating Unit.

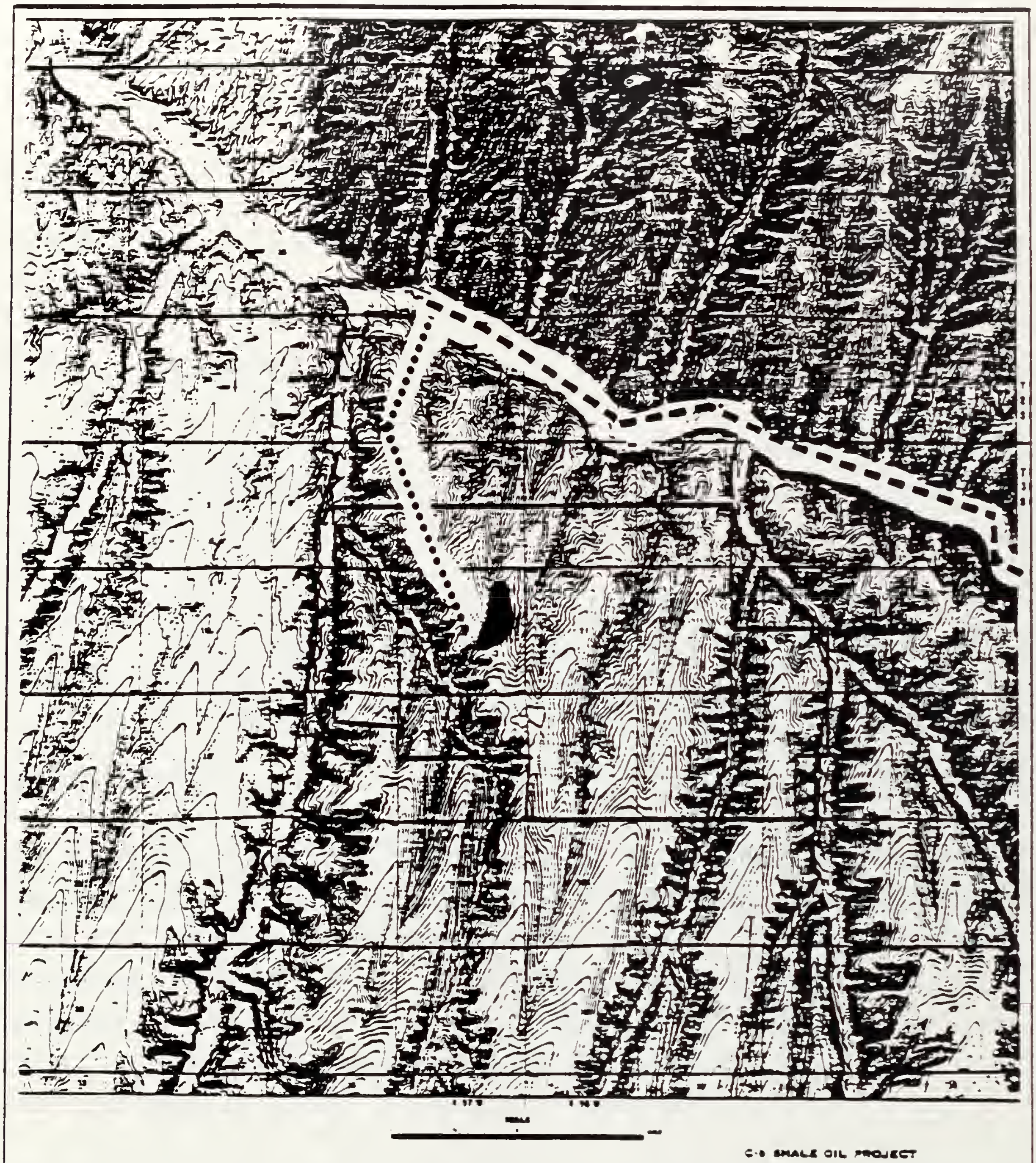
2.2.1.5 UTILITY REQUIREMENTS

The utility requirements for the OUG Facilities are shown in Table 2.2-1.

The overall plant water requirements will be met by mine water produced at the Tract during the mine dewatering operation. For the production of 14,100 BPCD of syncrude, water produced by dewatering will exceed the demand for plant make-up water and the excess mine water will either be discharged to the Piceance Creek, under valid NPDES permit, reinjected after filtration, or used for irrigation by sprinkling. The OUG water requirements of 1724 gallons per minute make up approximately 74% of the average of 2300 GPM estimated mine dewatering flow.

A four-inch natural gas line to the Mine Development Area was installed by the Western Slope Gas Company in 1979 (see Figure 2.2-2). This line supplies natural gas to an electric generating plant consisting of four 1,000 KW gas-engine-driven generators. The generator plant supplied the electrical power for shaft sinking, mine water pumping, and miscellaneous power and lighting requirements. The gas engine generator plant was converted to emergency service in 1982 when White River Electrical Association Inc. extended power lines to the Tract. Ultimately the natural gas system will feed the Hydrogen Unit of the OUG Facilities and provide pilot gas to all the process furnaces and flares. The OUG natural gas requirements are 352 million BTU/hour.

FIGURE 2.2-2



- - - - - - - EXISTING LINE

••••••••••••• EXISTING CB ROW & LINE

NATURAL GAS PIPELINE ROW

The CB Plant and Mine will require approximtely 37.5 megawatts of electric power when operating at rated capacity. This power will be supplied by the White River Electric Association of Meeker, Colorado. The single pole line supplying this electrical power is 20 miles long and is rated 138,000 volts (138 KV) and 100 megavolt amperes (mva) capacity (see Figure 2.2-3 for its right-of-way). This line has been installed and is in service; it is stepped down to 13.8 KV at the mine station on Tract. The OUG power requirements are 6000 KW.

2.2.1.6 ENVIRONMENTAL CONTROL

In general, the OUG will have to meet the same environmental regulations as would a new petroleum refinery. These regulations are categorized in three major areas:

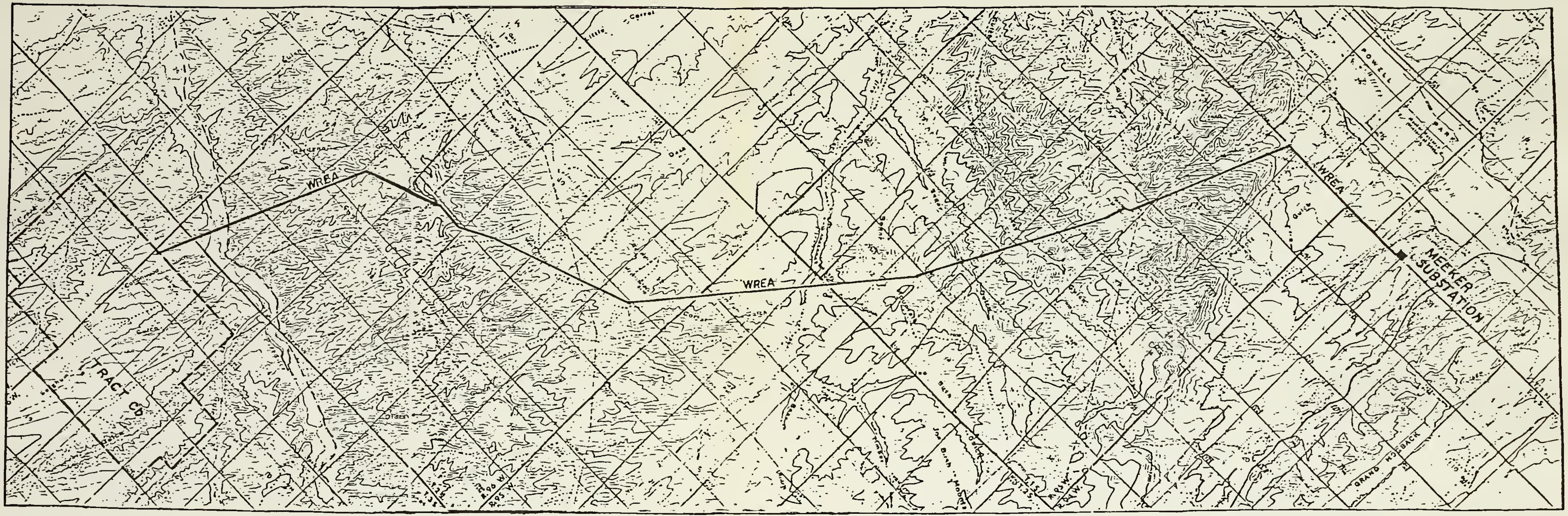
- o Air Regulations
- o Water Regulations
- o Solids Regulations

Air Regulations

The air regulations pertain to the emissions of pollutants from three main sources: combustion, fugitive emissions, and emissions from tanks and valve fittings. Control plans include the use of Best Available Control Technology (BACT) to minimize combustion emissions, reduction in fugitive emissions by vapor recovery and good housekeeping practice in general, and the use of additional equipment in specific instances, such as mechanical seals for pumps and covers for oily water separators.

Combustion emissions are reduced basically by desulfurizing the fuel gas and using low NO_x burners on the fired heaters. No environmental problems are currently anticipated concerning any other products of combustion.

The raw shale oil and syncrude tanks are equipped with a vapor recovery system to collect any vapors and process them to reduce emissions.



WREA TRANSMISSION LINE 138 Kv

OIL SHALE TRACT C-b

FIGURE 2.2-3
POWERLINE RIGHT-OF-WAY

In general, no air-borne organics will be observed since the plant operates in a closed system where the organics would be thermally destroyed.

The OUG complies with all applicable state and federal air quality standards and emission limitations. The facility employs recognized Best Available Control Technology as approved by the Region VIII office of the U.S. Environmental Protection Agency, and the Colorado Department of Health.

Water Regulations

Water regulations will have little impact on the OUG since the waste waters produced are processed in other areas of the CB Plant, and are subject to overall regulation under applicable state and federal codes.

Solids Regulations

Solids regulations apply to the dearsenater catalyst. This catalyst will collect the metals and other solids from the raw shale oil. The catalyst, once expended, will be removed and shipped off site for reprocessing.

2.2.2 ON-SITE HOUSING FACILITY (MANCAMP)

2.2.2.1 DESCRIPTION OF ON-SITE HOUSING

In order to meet the projected short-term housing demand of the temporary construction workforce, CB plans to develop a single-status housing facility (mancamp).

Figure 2.2-4 illustrates the planned mancamp location within the CB Project site. Approximately 40 acres have been identified to accommodate the facility, which will be designed for up to 850 units. The facility will be a full-service operation, consisting of a combination recreational vehicle (RV) park/mobile motel-type facility of up to 350 units, and a modular housing development containing up to 500 motel-style or bachelor quarter (BQ) units. The design of the facility will allow the construction of the 850 units/spaces in two development stages. Construction of up to 350 RV spaces and mobile motel-type units on RV sites will proceed initially followed by up to 500 motel-style units. The design of the mancamp will be flexible in order for CB to build either the full component of RV spaces or a combination of RV spaces (e.g., 200) and mobile motel-style living quarters (e.g., 150). A conceptual site plan for the 850-unit mancamp depicting residential building locations, traffic circulation, security facilities, dining hall/administration building (Community Center), recreational facilities, and ancillary mancamp facilities is shown on Figure 2.2-5. A typical living unit floor plan and individual RV space layout are illustrated in Figure 2.2-6.

The 350 RV spaces will require approximately 20 acres. The spaces will be nominally 25 feet by 50 feet, or 25 feet by 60 feet, with each space designed to accommodate one RV trailer. Electrical, culinary water, and sanitary sewer services will be available to all spaces. Street design will promote orderly and safe vehicular and pedestrian circulation. Buses will be allowed to travel only on collector streets, which will be wider than the local streets. Two bath houses will be strategically located within the RV park. Each will provide showers and toilet facilities (men and women) and laundry facilities for approximately 175 occupants. The

FIGURE 2.2-4

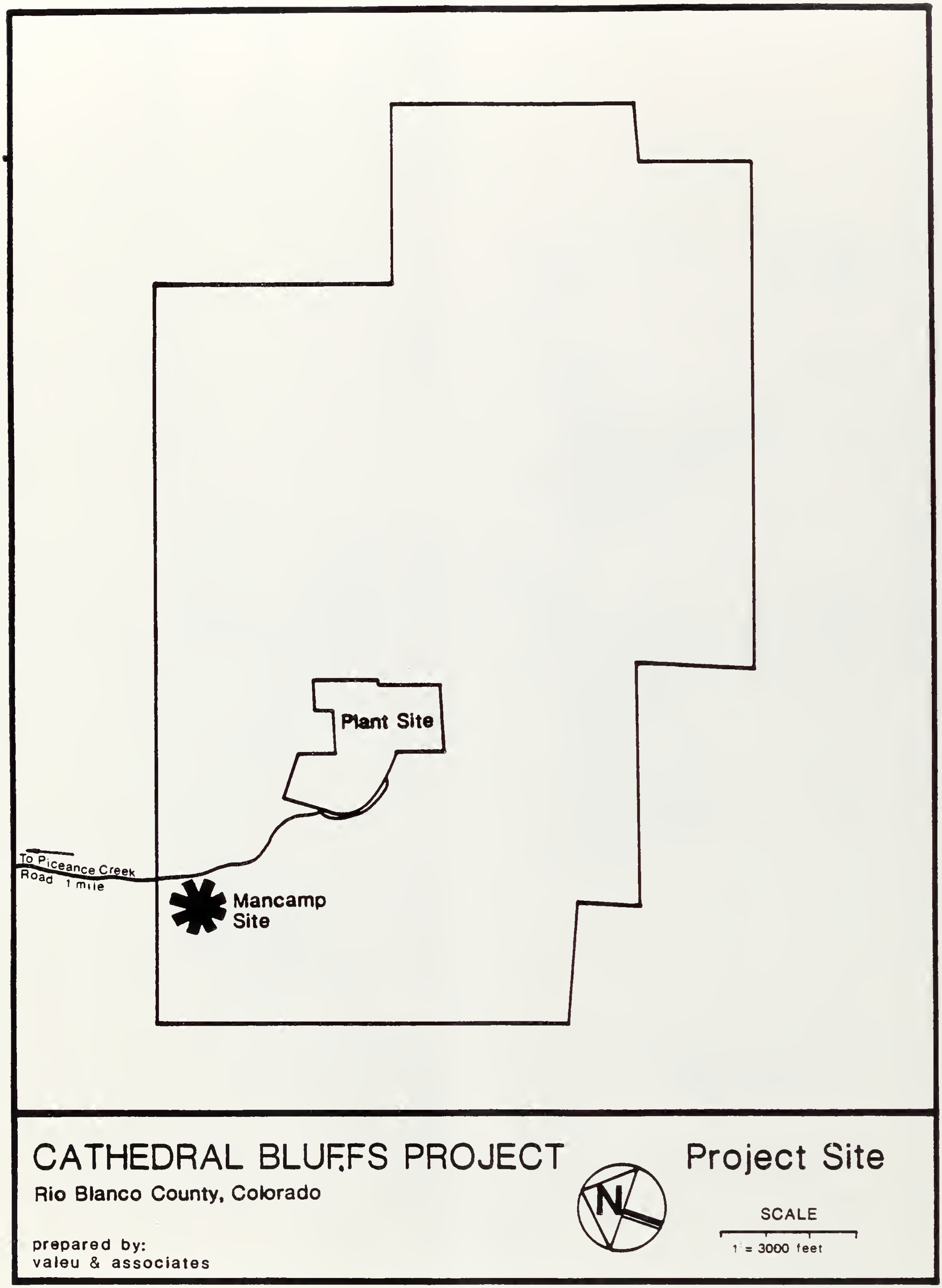
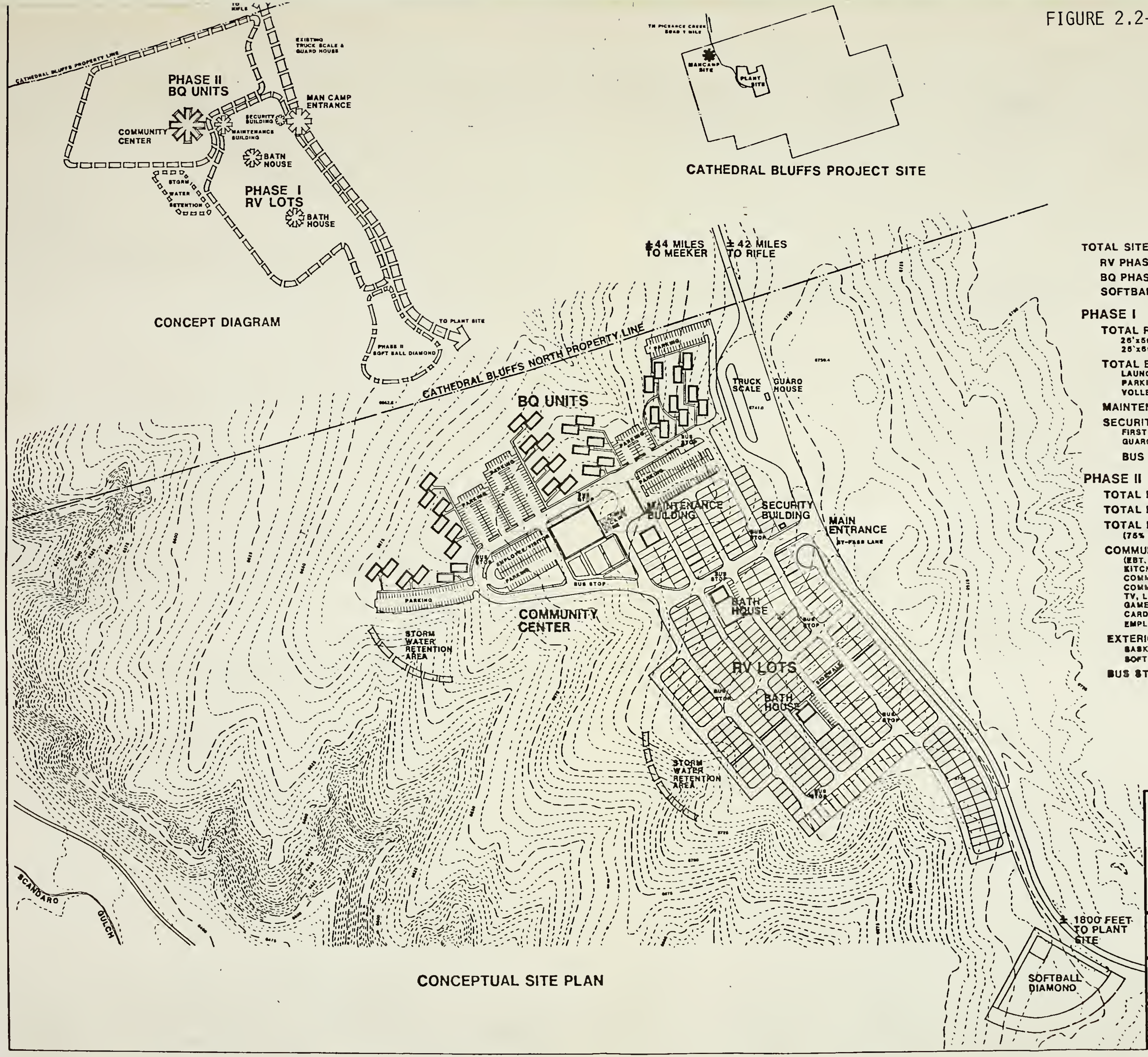

To Piceance Creek Road 1 mile
Plant Site
Mancamp Site
CATHEDRAL BLUFFS PROJECT
Rio Blanco County, Colorado
prepared by: valeu & associates
N
Project Site
SCALE
1" = 3000 feet

FIGURE 2.2-5



TOTAL SITE ACREAGE	± 36.8 ACRES
RV PHASE	± 18.7 ACRES
BQ PHASE	± 16.0 ACRES
SOFTBALL	± 2.1 ACRES
PHASE I	
TOTAL RV LOTS	± 350 LOTS
26'x50'	± 290 LOTS
26'x60'	± 60 LOTS
TOTAL BATHHOUSES (EST. 2,500SF.)	2
LAUNDRY FACILITIES (EST. 340SF.)	1
PARKING (10' X 20' STALLS)	11 STALLS
VOLLEYBALL/BASKETBALL	1
MAINTENANCE BUILDING	1
SECURITY BUILDING	1
FIRST AID	
GUARD STATION	
BUS STOPS	5
PHASE II	
TOTAL BQ UNITS	500 UNITS
TOTAL BQ BLDGS.(2-STORY)	18 BLDGS.
TOTAL BQ PARKING	± 375 STALLS
(75% OF UNITS)(10' X 20' STALLS)	
COMMUNITY CENTER	500 MEN
(EST. 16,000SF.)	
KITCHEN/DINING	
COMMISSARY	
COMMERCIAL LAUNDRY	
TV, LOUNGE	
GAME ROOM	
CARD ROOM	
EMPLOYEE/VISITOR PARKING	± 72 STALLS
EXTERIOR RECREATION	
BASKETBALL/VOLLEYBALL	2 COURTS
SOFTBALL DIAMOND	1
BUS STOPS	5

CATHEDRAL BLUFFS PROJECT

SINGLE-STATUS HOUSING FACILITY

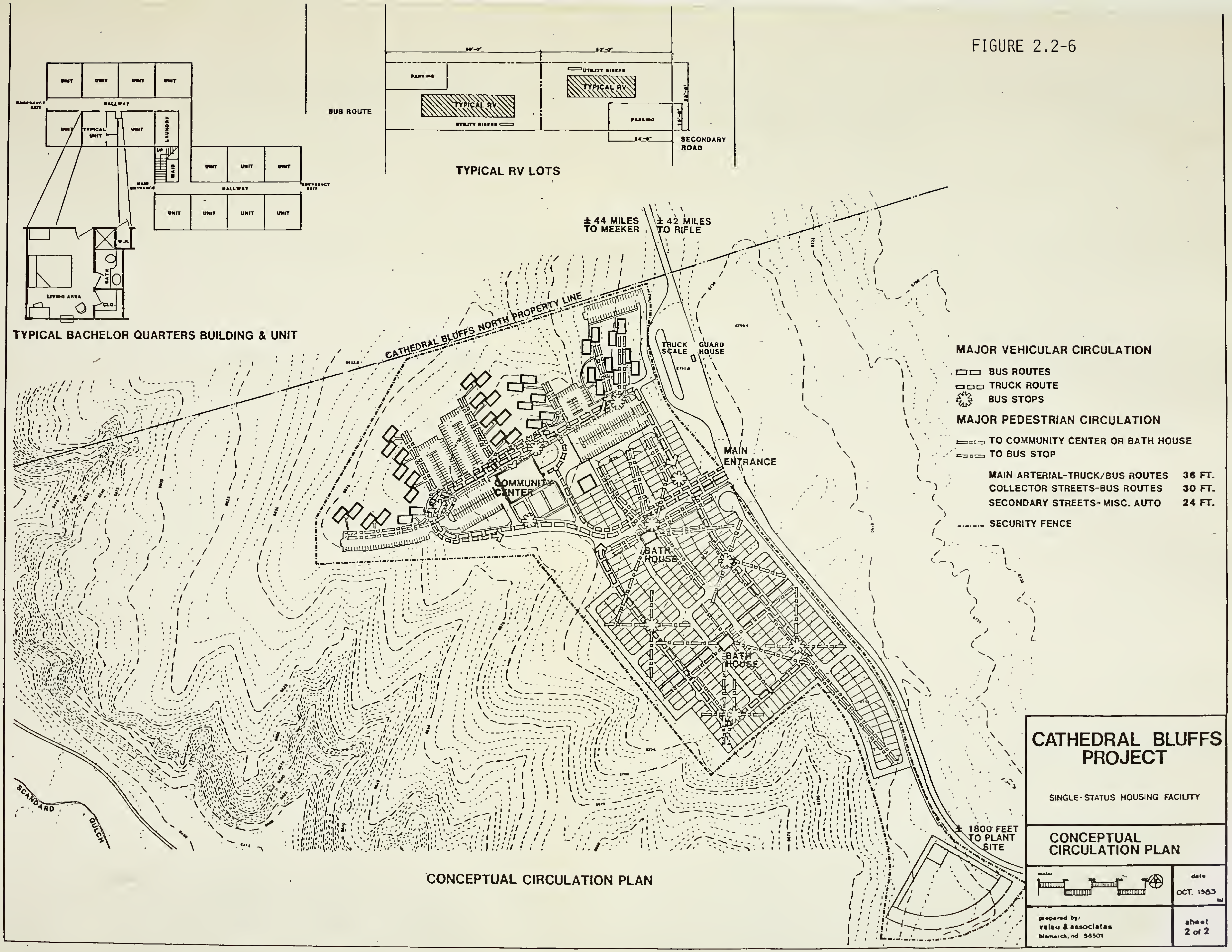
CONCEPTUAL SITE PLAN

date
OCT. 1983

prepared by:
valau & associates
bismarck, nd 58501

sheet
1 of 2

FIGURE 2.2-6



CONCEPTUAL CIRCULATION PLAN

mobile motel-style units will contain showers and lavatories within the units.

The 500 modular, motel-style units and related ancillary facilities will require approximately 20 acres. The single-status motel-style units will be incorporated in two-story buildings. The conceptual design envisions each building containing 28 rooms, designed for one person occupancy. Current plans depict the motel-style rooms containing approximately 210 square feet of living space, with a private lavatory and shower. Typical furnishings include: closet space, bed, reading light, dresser, desk, and chair. There will be laundry facilities, a small lounge, and storage area within each 28-room building. Maid services will be available.

There will be a nominal fee charged to both motel unit and RV park occupants. The exact amount of the fee remains to be determined based upon economic conditions extent at the time of occupancy of the units.

2.2.2.2 SUPPORT FACILITIES

In order to attract and retain a construction worker in the single-status facility for the longest possible duration, special amenities and features will be developed. Special emphasis will be given to the development of an appealing living environment, with priority given to the living quarters, dining area, indoor recreation facilities, and outdoor amenities. In addition, the single-status facility will include the following ancillary services: fire protection, medical, security protection, laundry, postal services, and a commissary. Full culinary water and wastewater treatment systems will be incorporated.

Construction specifications will provide for paved streets, open space, limited lawn and landscape amenities, and a general exterior decor which will contribute to a pleasing appearance. Bus stops will be established at key access points to accommodate busing of workers to and from the plant site and to provide for routine trips to surrounding communities.

The design and construction of all mancamp infrastructure will comply with pertinent state and local regulations. The culinary water system will be designed to provide up to 55 gallons per person per day for each RV occupant and 75 gallons per person per day for each motel-style unit occupant. To ensure adequate fire protection, design requirements will be based upon a recommended minimum flow of 1,000 gallons per minute for a two-hour duration. A water sprinkler system will be constructed in the dining hall facility to gain the necessary fire protection.

An adequate supply of culinary water will be provided by a domestic water treatment facility located at the Project site. This water will be stored in facilities with a capacity equal to the average daily flow, plus fire flow. Adequate pumping facilities will be provided as needed to maintain storage and design pressures and fire flows. The entire culinary water system capacity will conform to Colorado Health Department standards.

It is expected wastewater volume will be equal to domestic water supply less any irrigation flow from the system. Similar to the culinary water system, the design and construction of the wastewater collection system will conform to Colorado Health Department standards.

A single entrance into the mancamp will be necessary to manage traffic movement and for security purposes. Two types of streets will be designed to move vehicles within the mancamp. First, 36-feet wide collector streets will serve as the major carriers for through traffic and internal circulation of trucks, buses, and maintenance vehicles. Second, a 24- and 30-feet wide local streets will serve one primary function--moving workers to their respective dwelling units from the collector streets. Both the collector and local streets will be paved, but without curb and gutter. Sidewalks will be constructed among the motel-style units to promote efficient pedestrian movement to and from recreational and dining facilities. It is not expected sidewalks will be constructed within the RV park.

Parking will be provided for a percentage of the mancamp residents. Parking will also be provided for auxiliary uses; i.e., visitor parking,

security, maintenance, and administration. Bus stops will be strategically located throughout the facility to provide convenient service to all occupants.

The design and construction of the mancamp will include storm drainage and retention facilities to control surface runoff. It is expected the majority of the runoff will be carried above ground in the streets, back lot lines, and open ditches. To prevent soil erosion, the Project will landscape and revegetate all disturbed property. As a security measure, the entire mancamp perimeter will be fenced with a six-feet high chain link barrier. Both electrical and natural gas facilities are currently available within the Project site. Cathedral Bluffs will work with the appropriate utility companies to ensure adequate power and gas is available in a timely manner for construction and operations of the mancamp.

2.2.2.3 SERVICES

Cathedral Bluffs will develop a dining facility to accommodate between 500 to 600 workers. It is expected this facility will primarily serve the motel unit occupants, but it will be available to the RV park residents. The facility will provide three meals per day, Monday through Friday. It is expected limited dining services will be needed for the mancamp population on the weekends. Should the Project go to a six or seven day work week, full dining services will be available on those days. A commissary will operate in the dining hall building and include the following services: post office, barbershop, vending machines, magazine shop, non-prescription drugs, and toiletries.

Cathedral Bluffs intends to provide shuttle transportation services within the mancamp. As mentioned, bus stops will be conveniently located throughout the motel area and RV park, with adequate loading and unloading area. The bus stops will be signed and bus schedules made available to all mancamp residences. Shuttle buses will transport workers to and from the plant site, a one-way distance of approximately one mile. Adequate buses will be available to ensure that the mancamp residents can be transported in a timely manner. Shuttle service to Rifle and Meeker will be available daily to all mancamp occupants.

Both indoor and outdoor recreational facilities will be available to all mancamp occupants. It is expected the indoor facilities will be incorporated in the dining hall building, in conjunction with the administration facilities to ensure proper management of indoor equipment. Indoor facilities planned for the mancamp include: pool tables, ping-pong, foosball tables, TV room, card tables, electronic games, and reading room.

Outdoor recreational amenities will be constructed, including: basketball courts, volleyball courts, horseshoe pits and a softball diamond.

Cathedral Bluffs will coordinate its security programs with local law enforcement agencies. Cathedral Bluffs will initiate a security program, which includes fencing the mancamp site primarily to discourage trespassing. The site's perimeter and housing developments will be patrolled regularly by security officers equipped with radio transmitters. To control vehicular and pedestrian movement into the site, a guard station will be constructed at the entrance to the mancamp area. This station will be manned on a 24-hour basis by uniformed security personnel. The RV park area, motel units, parking lots, administration buildings, and entrance guard station will be well lighted to minimize damage to property and persons.

The following fire protection services will be provided. First, a pumper truck will be housed at the mancamp in an indoor building. This vehicle will be equipped with the required auxiliary facilities; i.e., fire hoses, foam, axes, and extinguishers. The major mancamp building (dining hall/administration/- indoor recreation facility) will be fitted with a water sprinkler system. This facility and the living unit buildings will be equipped with smoke alarms in each room. Fire extinguishers and fire hoses will be strategically placed in each residential building and the dining hall. Security personnel on 24-hour duty within the mancamp compound will be trained to assist the designated fire protection personnel in any emergency situation. Mancamp residents will be informed on typical fire safety and evacuation methods.

Cathedral Bluffs will provide medical support services at the mancamp. A fully equipped ambulance will be housed on the Project site available to personnel at the plant site and mancamp. A first aid station will be located in the security building and staffed with certified emergency medical technicians. The Project will coordinate the delivery of medical services with the Meeker and Rifle hospitals.

A maintenance building will be constructed on the Project site to provide storage and a workshop for maintenance equipment and supplies. It is expected the utility maintenance, ambulance, fire protection and security vehicles will be housed in this building.

2.2.2.4 MANAGEMENT POLICIES

The following section summarizes the major management policies as they relate to the operation of the mancamp. Detailed rules will be developed in consultation with, and administered by CB's housekeeping catering contractor.

- Single-status workers only in the motel units (male or female).
- Single-status worker and spouse only (no children) in the mancamp, if both spouses work at the Project site.
- Cathedral Bluffs employees and workers of Cathedral Bluffs' contractors will be permitted to occupy the mancamp.
- A nominal fee will be charged to occupants of the mancamp.
- Cathedral Bluffs will coordinate the provision of law enforcement, fire protection, and medical services with the Rio Blanco Sheriff's Department, Meeker Rural Fire Department, and Meeker and Rifle Hospitals, respectively.
- Upon completion of Project construction, disturbed land will be reclaimed in accordance with the lease provisions.

2.3 PROJECT SCHEDULE

2.3 PROJECT SCHEDULE

2.3.1 OIL UPGRADING FACILITY

The master project schedule appears on Figure 2.3-1.

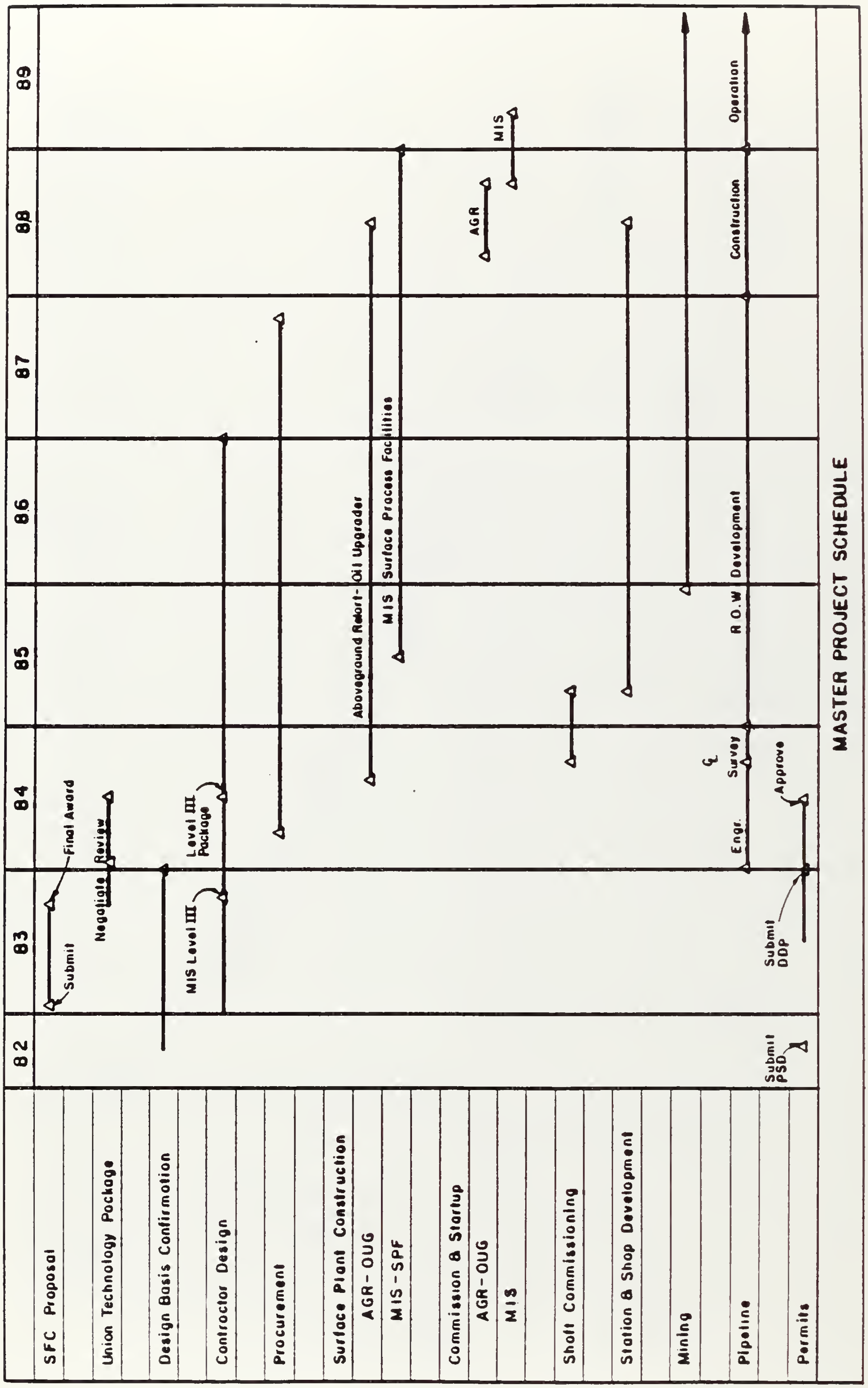
Milestone dates associated with this schedule are:

- 1984 Start Material Handling Facilities Development
- 1984 Start AGR and OUG Surface Processing Facilities Development
- 1985 Start MIS Surface Process Facilities Development
- 1986 Surface Retort Facilities Completed
- 1987 Aboveground Retort Startup
- 1987 Ventilation/Escape (V/E) Shaft Equipped and Fully Operational
- 1987 Oil Upgrading Facility Start-up
- 1988 Ignite First MIS Retort
- 1989 AGR Steady State Production
- 1989 MIS Retorts Full Production
- 1989 Oil Upgrading Facility Steady-State Production

2.3.2 ON-SITE HOUSING

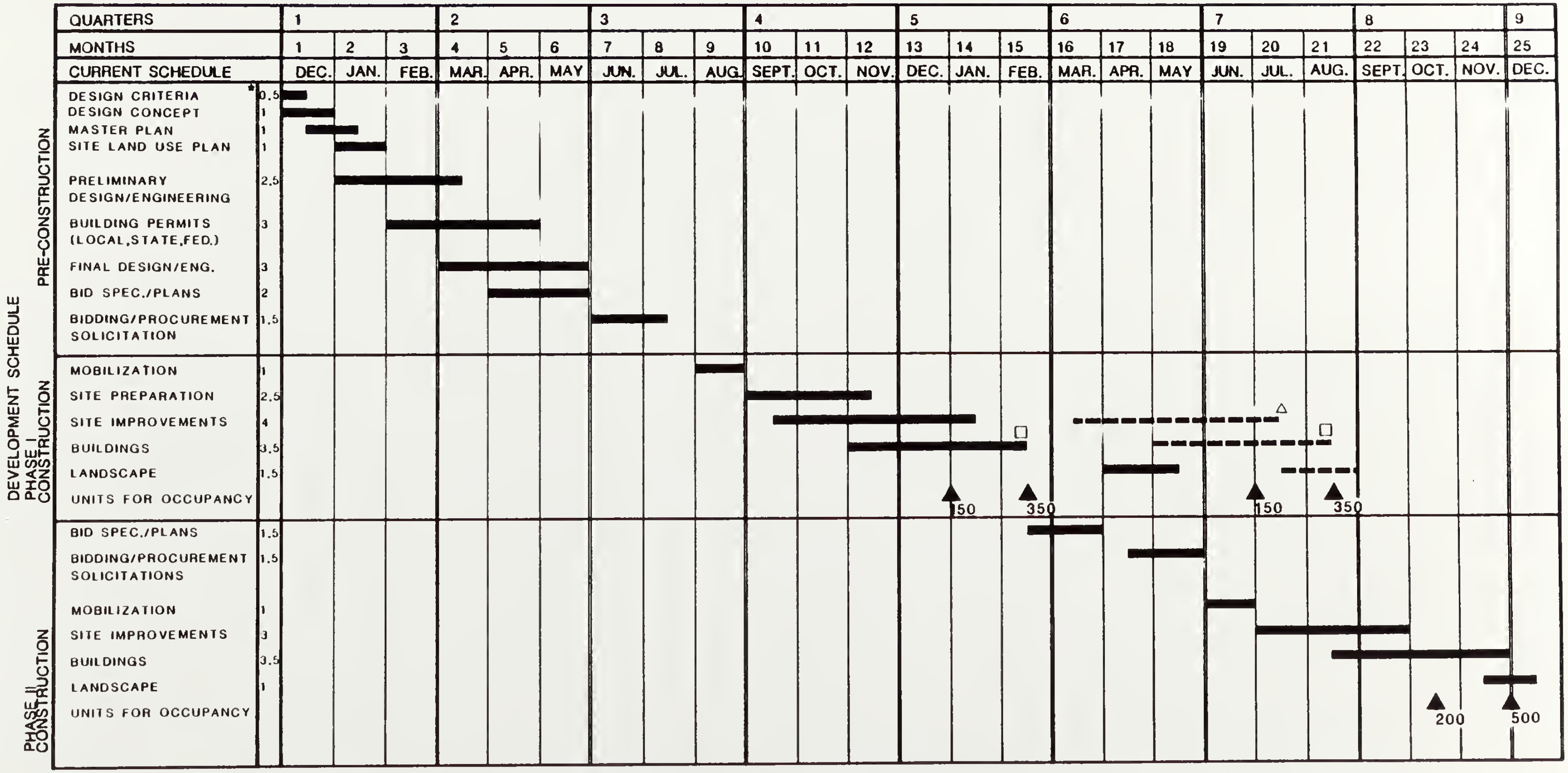
The schedule for development of on-site housing appears in Figure 2.3-2.

FIGURE 2.3-1



MASTER PROJECT SCHEDULE

CATHEDRAL BLUFFS
MANAGEMENT SCHEDULE



NOTES: *monthly duration
△alternate schedule based on potential weather constraints.

□ optional conversion of RV. spaces for housing modular motel style living quarters.

▲ units to be phased in for occupancy.

SOURCE:valeu & associates
prepared by:
valeu & associates

nov. 1983

FIGURE 2.3-2

2.4 ESTIMATED COST OF THE PROJECT

2.4 ESTIMATED COST OF THE PROJECT

The total capital cost estimate for the oil upgrading facility and the temporary on-site housing facility is confidential, but it will be provided under separate cover to the Rio Blanco County Commissioners at their request.

3.0 SOCIOECONOMIC ANALYSIS

The socioeconomic analysis was prepared principally by the consulting firm of Crane & Associates of Grand Junction, Colorado with assistance in the housing area from the firm of Valeu & Associates of Bismarck, North Dakota.

The demographic projections presented in this analysis were calculated using the Planning and Assessment System (PAS) Model, version 87.1, developed by Mountain West Research, Southwest, Inc. for the Colorado Cumulative Impacts Task Force (CITF). The PAS Model calculates county level employment and population projections using three separate but interrelated submodels. The demographic submodel uses cohort-survival techniques to track the effects of mortality and births upon population over time. This model also adjusts population for non-employment-related migration, such as retirement migration. The economic submodel calculates the effects of a change in basic employment upon non-basic employment. This is done by determining the change in personal income associated with a change in basic employment, then applying a set of coefficients (gammas) which relate that change in income to a change in non-basic employment. A concept of "market area" is incorporated into this submodel to reflect the regional effects of increases or decreases in personal income. The third submodel is a labor market submodel which is used to maintain consistency between labor supply and labor demand. If they are not consistent, as defined by an upper and lower unemployment bound supplied by the user, employment-related migration is assumed to occur until equilibrium is established.

The PAS Model also has the capability to allocate county level demographic projections to municipalities, school districts and special jurisdictions. This allocation process relies upon the user to define the residential distribution of basic sector workers. The model then allocates non-basic workers based primarily on the size of existing communities within the county. For the purposes of this analysis the CB Project related population impact in each county was allocated to sub-county areas separate from the PAS sub-county allocation routine. The actual sub-county

distribution of Project-related population is documented in the Demographic Assumptions section of Volume II.

The local government fiscal analysis was prepared using the Fiscal Systems Model (FSM) developed by B.Y. Analytics for the CITF and the Associated Governments of Northwest Colorado. The FSM incorporates three sub-models; a revenue sub-model, an operations and maintenance sub-model and a capital sub-model to forecast annual fiscal surpluses or deficits for individual local government jurisdictions. FSM relies upon annual forecasts of population, housing demand and personal income, supplied by PAS or directly by the user, as the principal determinants of change in local government revenues and expenditure requirements. The revenue and operations and maintenance sub-models require benchmark data in all revenue and O.& M. expenditure categories to be supplied by the user. For this analysis, actual 1982 data was used. The capital sub-model requires a substantial amount of information concerning each capital facility within a jurisdiction, including: existing capacity, service area, and incremental cost of expansion.

Based primarily upon the population forecast for each jurisdiction, FSM projects revenues, O.& M. expenditures and required capital expenditures on an annual basis. All projections are in constant 1982 dollars. FSM does not provide for the amortization of capital expenditures over time to simulate debt financing. Instead, all capital expenditures are accounted for in full in the year in which the facility is required. Further documentation of the assumptions used in the fiscal projections is included in the Fiscal Assumptions section of Volume II.

3.1 DESCRIPTION OF CURRENT SOCIOECONOMIC CONDITIONS

3.1 DESCRIPTION OF CURRENT SOCIOECONOMIC CONDITIONS

A number of jurisdictions will be affected by the development of the Project; these include counties, municipalities, school districts and special purpose districts. The C-b Tract lies within Rio Blanco County, and the Meeker RE-1 School District. Employees and related population will reside in Garfield County, the towns of Meeker, Rifle, Silt, Parachute, Garfield School District RE-2 and Grand Valley School District RE-16. The sanitation district in Meeker, the Rifle hospital district, and various other special purpose districts will also be affected.

3.1.1 EMPLOYMENT AND POPULATION

The Colorado economy as a whole has suffered from the slowdown in mining and oil and gas industries over the past year. Statewide unemployment stood at 7.3% in June, 1983, representing 121,700 persons. In occupations most closely associated with the oil shale industry, mining and construction, total employment decreased significantly in 1982. Statewide employment in mining occupations fell from 46,200 to 40,700 while employment in construction occupations fell from 82,100 to 78,100 during 1982.

Western Colorado, an area which has experienced rapid growth in employment in recent years, and which has a normally low unemployment rate has been particularly affected by the economic slowdown. The shutdown of the Colony Oil Shale Project in May, 1982 eliminated 2100 jobs, primarily in the construction trades. Nearly 2,000 molybdenum miners and mill employees have been on temporary layoffs in recent months, and many of these jobs are expected to be permanently lost. Colorado coal mines, mostly in the western part of the state, have laid off more than 600 miners in the face of a sagging market. Garfield and Rio Blanco Counties are now experiencing unemployment rates which are higher than the State as a whole and significantly higher than either county has experienced in the past.

Rio Blanco County has an estimated labor force of 4330 of which 416 persons or 9.6% are estimated to be unemployed. Garfield County's labor force

numbers 19,620 persons of which an estimated 2234 or 11.4% are unemployed (Source: Colorado Labor Force Estimates, Colorado Division of Employment and Training, August, 1983).

The Colorado Division of Employment and Training tracks regional labor supply and demand data on a quarterly basis. The most recent "Quarterly Occupational Supply/Demand Outlook" (second quarter 1983) indicates that many of the occupations required by CB are currently oversupplied in western Colorado. The Division's data indicate that welders, electricians, electrician helpers, carpenters, operating engineers, industrial truck operators and miners are either "highly oversupplied" or "significantly oversupplied" throughout western Colorado.

Population estimates for each of the local government jurisdictions in the CB Project area are provided in Table 3.1-1. The 1980 population figures are taken from the 1980 U.S. Census of Population. The 1982 population estimates were produced using the PAS model.

3.1.2 PUBLIC SERVICES AND FACILITIES*

The counties and communities in the project area have upgraded their respective capacities to provide public services and facilities in the last few years. The facility improvements and expansions give the counties and communities of Rifle, Meeker, and Silt a capacity in many areas to accommodate substantial growth. In other areas which local governments provide services, however, they are currently operating at or above capacity, and the demands of growth will require upgrading and expansion

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*Note: Public building size is defined in terms of the CITF definition of "usable space" (i.e. buildings constructed prior to 1945 have "usable space" equivalent to .6 X actual square footage).

TABLE 3.1-1

1980 AND 1982 POPULATION ESTIMATES BY JURISDICTIONS

Jurisdiction	Total Population 1980	Total Population 1982
Rio Blanco County	6255	7290
Meeker	2214	2540
Meeker Sanitation District	2369	2680
Meeker Library District	3547	3850
Meeker Rural Fire District	3547	3850
Eastern Rio Blanco Recreation District	3547	3850
Garfield County	22514	30500
Rifle	3405	5250
Silt	823	1200
Parachute	240	740
Grand River Hospital District	8682	13300
Rifle Rural Fire District	5341	7270
Silt/New Castle Rural Fire District	4053	5060

Source: U.S. Bureau of the Census, 1980 Population Census.
PAS Model

of existing facilities. This section reviews the existing capacity of local government jurisdictions to provide required services to their constituents.

3.1.2.1 RIO BLANCO COUNTY

3.1.2.1.1 General Government Space

Rio Blanco County's administrative offices are currently housed in the County Courthouse in Meeker and the Courthouse Annex in Rangely. The Meeker Courthouse building was constructed in 1935, with an addition in 1955. The building contains usuable space of 15,600 sq. ft. The Courthouse Annex in Rangely was completed in 1982 and it contains about 9,000 sq. ft. These facilities should be adequate to accommodate substantial growth.

3.1.2.1.2 Public Safety Space

The County Jail and Sheriff offices are contained in the Courthouse complex in Meeker. Constructed primarily in 1935 this area is estimated to contain 2225 sq. ft. of usuable space. These facilities are considered to be substantially less than adequate to meet current requirements.

3.1.2.1.3 Shop Space

District 1 County shops are located in Meeker and contain an estimated 28,470 sq. ft. of usuable area. The District 2 County shops are located in Rangely and contain 12,390 sq. ft. of space. These facilities should be adequate to accommodate substantial growth.

3.1.2.1.4 Solid Waste Disposal

Rio Blanco County operates two sanitary landfills, each containing approximately 20 acres. These sites should be adequate for a number of years.

3.1.2.1.5 Hospitals

The Meeker area is served by the Pioneer Hospital, a 17 bed facility including a nursing home located in Meeker. The hospital currently has an average occupancy rate of 25%. Pioneer Hospital has just completed a major expansion program which included the construction of a new emergency room, trauma room, administrative and laboratory facilities, and major equipment additions. A planning program has been initiated and a consulting firm retained to examine additional services needed, but the hospital is adequate to serve a substantial growth in population.

The hospital is supported primarily through user fees supplemented with property tax revenues.

3.1.2.2 MEEKER

3.1.2.2.1 General Government Space

Meeker's Town Hall was constructed in 1950 and it contains about 1900 sq. ft. which is inadequate to serve existing requirements. Town Council meetings and other functions which require meeting room space take place in the Fairfield Community Center, a public building well suited for that purpose.

3.1.2.2.2 Shop Space

The Meeker town shop building consists of about 4000 square feet. It was constructed in 1968. The shop facility is considered less than adequate to meet existing requirements.

3.1.2.2.3 Water Treatment, Storage and Distribution

Meeker has recently completed a major expansion to its water treatment facility, increasing its capacity to 2.8 MGD. This capacity is sufficiet to provide treated water to a population of about 6500 persons. Meeker has treated water storage capacity of 2.5 MGD or sufficient to support about 5800 persons. Water distribution facilities have a capacity to provide for 2.9 MGD or about 7250 persons.

3.1.2.2.4 Recreation and Park Facilities

Meeker has recently reached an agreement with the Eastern Rio Blanco Metropolitan Parks and Recreation District for the operation and maintenance of its 17 acres of developed parks. The only major recreation facility which the town continues to operate is the swimming pool, but it is anticipated that that facility will also be operated by the District within the next year.

3.1.2.2.5 Streets and Roads

Meeker currently maintains 4.8 miles of residential, 3.8 miles of collector and 1.5 miles of arterial streets. The town estimates that $1.2 million will be required to be spent to upgrade the existing street and storm drainage system over the next four years (1983-1986).

3.1.2.2.6 Comprehensive Planning

The town of Meeker is engaged in developing a comprehensive planning program. The program includes the development of planning objectives; land use, housing and facility planning elements; revisions to existing zoning and subdivision regulations; and intergovernmental agreements.

3.1.2.3 MEEKER RE-1 SCHOOL DISTRICT

Meeker's elementary school was originally constructed in 1937, and was remodeled in 1951. The total usable square footage of the elementary and kindergarten buildings is estimated to be 25,300 sq. ft.

The middle school is the second oldest school building in the district. It was constructed in 1924 and it contains approximately 9000 sq. ft. of usable space. The junior high school and senior high school are the most recently constructed school buildings in the district, having been constructed in 1955 and 1976, respectively. These two buildings have a combined area of 117,600 sq. ft.

In addition to these school buildings in town, District RE-1 also operates

the Rock School on Piceance Creek, which contains approximately 8600 sq. ft. of usable space.

These school buildings are adequate to serve the existing population but elementary school facilities will require expansion to accommodate population growth.

The district has completed the installation of a new roof on the high school building. Reroofing and insulation of the elementary building along with the construction of a bus garage is planned within the next few years.

School District RE-1 has completed a land trade of 24 acres with the City of Meeker for two future school sites. A total of nine additional sites are proposed within the Meeker Terraces housing development east of the city. The District proposes to use money from the Oil Shale Trust Fund to construct a kindergarten building, a new elementary school, and a major addition to the junior high school as required by enrollment growth.

3.1.2.4 MEEKER SANITATION DISTRICT

The Meeker Sanitation District operates the wastewater collection and treatment system for the town of Meeker. The treatment plant has a capacity to treat 1.0 MGD of effluent, or a capacity to serve about 10,000 persons. The wastewater collection system is currently operating at about its design capacity. It is the policy of the district that development will offset the full cost of expanding the collection system and a portion of the cost of expanding the treatment system. Disposal of sewage sludge from the treatment plant is an ongoing problem for the Sanitation District. Currently, sludge is disposed of on a nine acre site of private pasture land. That site is not expected to be adequate to handle a growing population.

3.1.2.5 MEEKER RURAL FIRE DISTRICT

The Meeker Rural Fire District serves the eastern half of Rio Blanco County, including the town of Meeker. Its jurisdiction boundaries are the same as the RE-1 School District.

The Fire District operates out of 5200 sq. ft. of space adjoining the Town Hall. The district has upgraded its fire fighting equipment in recent years.

3.1.2.6 MEEKER LIBRARY DISTRICT

The Meeker Library serves Eastern Rio Blanco County from its location in the Fairfield Center in Meeker. The library contains approximately 5100 sq. ft. of space which is adequate for an expanding population.

3.1.2.7 EASTERN RIO BLANCO METROPOLITAN RECREATION AND PARKS DISTRICT

The recreation district operates the 17 acres of developed park lands and related facilities in and around the town of Meeker. Plans are for the swimming pool, now operated by the town to be transferred to the district for operation in the near future. The district plans to complete a softball complex, an ice skating facility, tennis court improvements and a neighborhood park in 1983. Some additional park facilities will be required to accommodate a growing population.

3.1.2.8 GARFIELD COUNTY

3.1.2.8.1 General Government Space

The Garfield County Courthouse was constructed in the 1920's. As in most public buildings of its age, much of the interior space is not well adapted to function. An addition of about 47,600 sq. ft. to the Courthouse is under construction. Once that addition is completed later this year, the County should have a total of 66,200 sq. ft. of space for general administrative purposes. enough to accommodate substantial population growth in the County.

3.1.2.8.2 Public Safety Space

With the recent addition of modular buildings, Garfield County's Public Safety space has been increased to about 9900 sq. ft. Using the adopted standards of 400 sq. ft. per 1,000 population, public safety space remains less than adequate. Planning for the construction of additional public

safety facilities is in progress, but specifications for the facilities have not been developed.

3.1.2.8.3 Shop Space

Garfield County has approximately 17,700 sq. ft. of space in its three county shop locations in Glenwood Springs, Silt and Rifle. Each of these facilities are older buildings. These facilities are not adequate to provide for existing shop space requirements.

3.1.2.8.4 Solid Waste Disposal

Garfield County has just developed a new sanitary landfill of 115 acres which will be adequate to serve the western area of the County for many years.

3.1.2.8.5 Libraries

New library facilities are currently being constructed in each of the six municipalities in Garfield County. Once this project is completed in 1984, over 25,000 sq. ft. of library space will exist county-wide.

3.1.2.9 RIFLE

3.1.2.9.1 General Government Space

Rifle's present City Hall is located in an older building containing approximately 12,000 sq. ft. of space. The city is currently constructing a new Town Hall which will include 18,000 sq. ft. of administrative space.

3.1.2.9.2 Shop Space

Rifle's principle shop facility is housed in a recently constructed 2800 sq. ft. metal building. Rifle has some additional space which is used primarily for storage, but current shop facilities are inadequate to meet existing requirements.

3.1.2.9.3 Water Treatment, Storage and Distribution

Rifle has recently completed a major expansion of its municipal water system providing the capacity to serve 10,000 persons. The new water system was also designed for further population growth. The addition of a filtering unit to the plant and other minor improvements will give the water treatment plant the capacity to provide for 16,000 residents. The present water treatment, storage and distribution system has a design capacity of about 4.3 MGD.

3.1.2.9.4 Sewage Collection and Treatment

The municipal sewage treatment system in Rifle has also been expanded, with the construction of a major outfall line and upgrading of the treatment lagoon. The sewage treatment system now has a design capacity of 1.37 MGD or capacity to serve about 12,000 persons.

3.1.2.9.5 Streets and Roads

Rifle currently maintains 14.3 miles of residential streets, 6.75 miles of collector streets and 2.18 miles of arterial streets. A major street improvement program which includes the upgrading of sanitary and storm sewer collectors is in progress. A total of $1.75 million will be spent on the street project in 1983 and 1984.

3.1.2.9.6 Police

Law enforcement services in Rifle are continually being upgraded. The police force now includes sixteen full-time officers, which exceeds the state standard of two officers per 1,000 persons.

3.1.2.9.7 Recreation

Rifle has a total of 22.5 acres of developed park land within its boundaries. In addition, the city owns and operates the Rifle Mountain Park, a 200+ acre park northeast of Rifle. An additional 5 acre park site

is scheduled to be developed in the near future, along with a 25,000 sq. ft. indoor recreation center. These facilities should be adequate to accommodate substantial growth in the community.

3.1.2.10 SILT

3.1.2.10.1 General Government Space

The town of Silt has recently completed the construction of a municipal building to house the town administration, the police department and fire and ambulance vehicles. The administration and the police department occupy about 4,000 sq. ft. of the 7200 sq. ft. building.

3.1.2.10.2 Shop Space

Approximately 3200 sq. ft. of the Silt municipal building is allocated to fire protection and ambulance services. About half or 1600 sq. ft. of this space is allocated as shop or maintenance facility space.

3.1.2.10.3 Water Treatment, Storage and Distribution

The present design capacity of the Silt water treatment plant is .6 MGD or a capacity to provide treated water to about 1,500 residents. Silt has treated water storage capacity of .95 MGD, or adequate storage for 2,400 residents. The water distribution capacity is rated as .6 MGD. The water distribution system is required to be expanded by builders as commercial and residential projects are developed.

3.1.2.10.4 Sewage Collection and Treatment

Silt is in the process of upgrading its two sewage treatment lagoons and its sewage collection system. Once the upgrading is completed, the collection and treatment system will have an approximate capacity of .29 MGD, or capacity to serve about 2,900 residents.

3.1.2.10.5 Recreation and Park Facilities

Silt presently has only 3.7 acres of developed park land. This is far less than the established standard of 7.7 acres for a town of similar size. Silt also has a tennis court and a softball field which are in need of upgrading.

The development of additional park and recreation facilities is a priority for Silt. The town is currently involved in the formation of a recreation district which should provide additional financing for new recreation facilities.

3.1.2.10.6 Streets and Roads

Silt has recently completed a major street paving program, so that its 7.2 miles of municipal streets are paved. The town estimates that an additional $250,000 is needed to complete curb, gutter and sidewalk work, and that $2,000,000 will be required over the next 10 years for drainage improvements.

3.1.2.10.7 Land Use Planning

Silt has recently completed a land use planning program which contains specific guidelines for accommodating future growth and development.

3.1.2.11 PARACHUTE

The town of Parachute has completed many municipal improvements in the past three years which allow it to accommodate a substantial increase in population.

3.1.2.11.1 General Government Space

Parachute completed construction of a 5800 sq. ft. Town Hall in 1981. This facility houses all town administrative offices, the police department and the town council chambers.

3.1.2.11.2 Shop Space

The town is just completing a 2500 sq. ft. shop and maintenance facility.

3.1.2.11.3 Water Treatment, Storage and Distribution

Parachute's water treatment plant is designed to produce up to 350 gallons per minute, or over 500,000 gallons of treated water per day. This capacity is supplemented by springs which produce 125 gallons per minute of water which does not require any treatment other than chlorination. The treated water storage capacity is about 600,000 gallons. The water distribution system has recently been upgraded so that it can handle a substantial increase in water usage. The present water system is capable of accommodating a population of about 2500 persons.

3.1.2.11.4 Sewage Collection and Treatment

Parachute receives sewage treatment services from the Battlement Mesa Water and Sanitation District. This system has a present capacity of 2.4 MGD, or capacity to provide for 24,000 people. Parachute's sewage collection system is sized to accommodate a large increase in population.

3.1.2.11.5 Recreation and Park Facilities

Parachute has recently developed a 4.75 acre town park and is in the process of developing a 1.75 acre highway rest stop facility which is expected to also be utilized by town residents as a recreation facility.

An indoor recreation facility, complete with gymnasium, exercise rooms and handball/raquetball facilities has recently been completed in Battlement Mesa. This facility is available for use by Parachute residents.

3.1.2.11.6 Streets and Roads

Parachute has a total of 6.5 miles of streets, many of which have been recently paved. No further street improvements are anticipated in the near future.

3.1.2.12 GARFIELD COUNTY SCHOOL DISTRICT RE-2

Garfield County School District RE-2 operates three elementary schools, a combination elementary-junior high school, a junior high school, and a senior high school. These facilities serve the communities of Rifle, Silt and New Castle.

Schools in the Garfield RE-2 District are currently operating near capacity, even though a new high school, a new elementary school and a vocational education center have recently been completed. The district has $4.7 million for additional school expansion available from Oil Shale Trust Funds. These monies are planned to be used to; add 6,000 sq. ft. to the new elementary school in Rifle, increasing its capacity from 350 students to 525 students, construct a new junior/senior high school, construct a new elementary school, and build a new shop facility. These facilities should allow the district to keep pace with enrollment increases over the next several years.

School enrollment in Rifle has remained relatively stable in spite of the overall decrease in employment and population in the area.

3.1.2.13 GRAND VALLEY SCHOOL DISTRICT RE-16

The Grand Valley School District serves the communities of Parachute and Battlement Mesa, and the surrounding rural areas. The district has recently added a new elementary and middle school, giving it a total of three school buildings. As these new buildings were designed in anticipation of growth due to both the Colony and Union Oil Shale projects, they contain a considerable amount of excess capacity. The elementary school, located on Battlement Mesa, is designed for up to 450 students, with a current enrollment of 165. The middle school, grades six, seven and eight, is designed for up to 225 students and its current enrollment is 92. The high school can accommodate 350 students and has a current enrollment of 89.

The two new school buildings are utilized by the district through two lease-purchase agreements with Exxon and with Union Oil Company. These agreements relieve the district of capital cost obligations for the buildings if additional property tax revenues are not forthcoming from the Colony or Union Parachute Creek Oil Shale operations.

3.1.2.14 GRAND RIVER HOSPITAL DISTRICT

Clagett Memorial Hospital operated by the Grand River Hospital District, serves the communities of Rifle and Silt, as well as Parachute and New Castle. The facility has 32 beds and is currently operating at an average occupancy rate of 40%. Outpatient service requirements have grown in recent years, and the hospital district recently completed the construction of a new emergency room, laboratory and X-ray facilities. The additional capacity for outpatient services and the existing low level of utilization will allow for substantial increases in patient loading.

3.1.2.15 RIFLE AND RURAL FIRE DISTRICT

This district provides fire protection services to the city of Rifle and the surrounding rural area. The district operates as an all volunteer force. The fire station is located in Rifle and it consists of about 8400 sq. ft.

3.1.2.16 SILT-NEW CASTLE FIRE DISTRICT

This district provides fire protection services to the towns of Silt and New Castle, and the surrounding rural areas. It also operates as a volunteer force with station facilities of about 5300 sq. ft.

3.1.3 HOUSING

3.1.3.1 INTRODUCTION

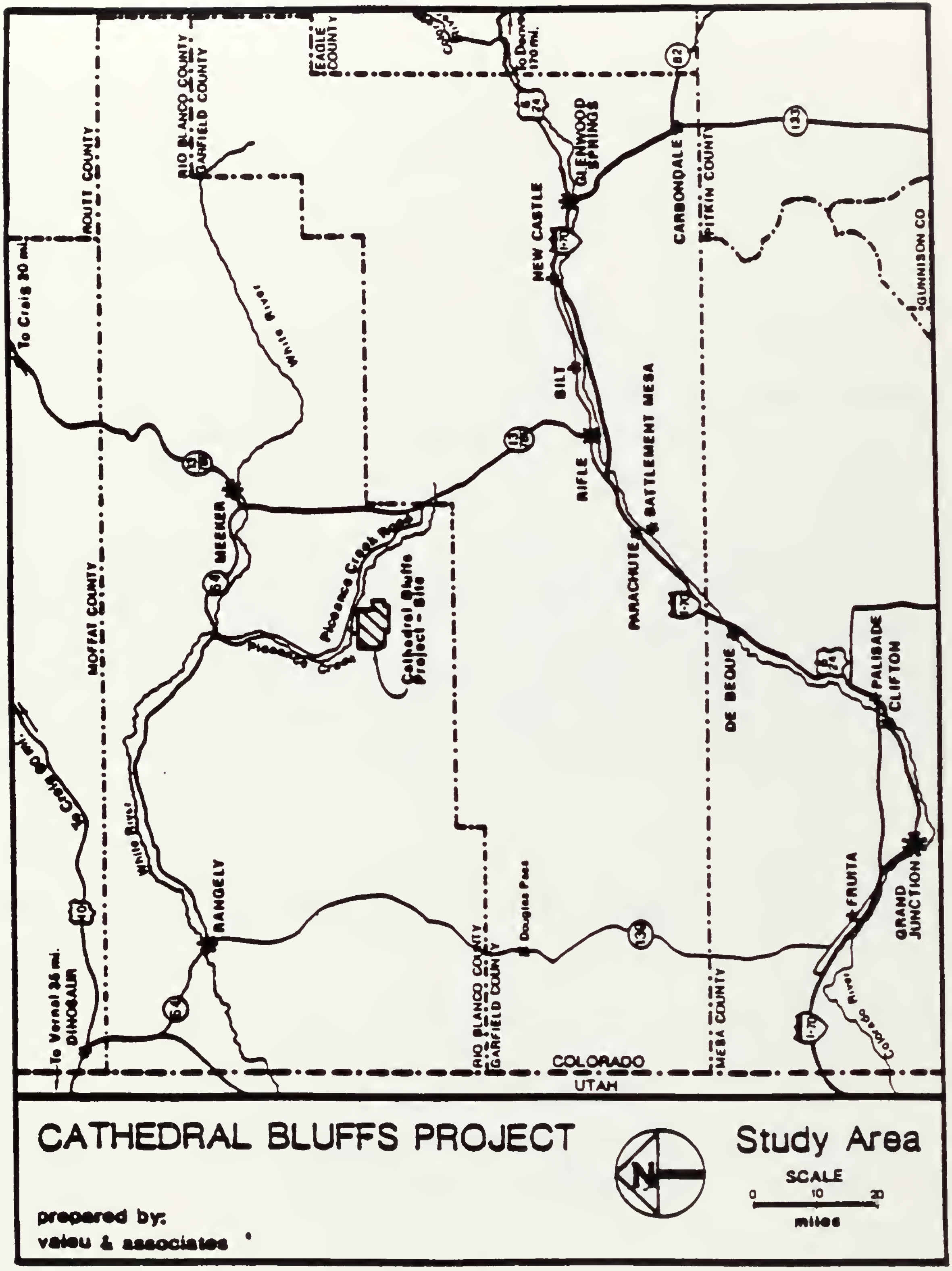
A thorough assessment of existing housing conditions is an essential element of a housing strategy. This section will identify existing housing conditions as they relate to the development of the CB Project. It is estimated that the vast majority of the housing impact associated with the CB Project will occur in Rio Blanco and Garfield Counties (Study Area). Figure 3.1-1 illustrates the CB Project in relation to the Study Area, which includes eight communities: Meeker, Rangely, Rifle, Silt, Parachute/Battlement Mesa, New Castle, Glenwood Springs and Carbondale. In mid-1983, approximately 65 percent of the Study Area's housing units were located in these eight communities.

Within each entity, a number of variables relative to the existing housing environment were assessed. First, the existing housing stock and building permits were inventoried. Regulatory mechanisms in place or proposed were reviewed to determine policy constraints and planning tools utilized by the various entities. Finally, the availability of land associated with housing development was analyzed.

3.1.3.2 HOUSING STOCK

Since the second quarter of 1982, Meeker, Rifle, and Parachute/Battlement Mesa have experienced a significant decline of population and an increase in dwelling unit vacancies. Over 35 percent of these entities' total housing units/spaces were vacant in mid-1983, or a total vacancy rate of 35 percent. In the three communities, multiple-family housing had a 56 percent vacancy rate. The vacancy rate was far less for single-family housing and mobile homes, averaging around 12 percent. Assuming the current rate continues, the number of residential permits issued in 1983 will be far below the last two years. Numerous subdivisions approved by these communities now contain large numbers of vacant lots.

FIGURE 3.1-1


To Craig 30 mi.
ROUTT COUNTY
RIO BLANCO COUNTY
GARFIELD COUNTY
EAGLE COUNTY
To Denver 170 mi.
GLENWOOD SPRINGS
CARBONDALE
PITKIN COUNTY
GUNNISON CO
NEW CASTLE
SILT
RIFLE
BATTLEMENT MESA
PARACHUTE
White River
MEEKER
MOFFAT COUNTY
Piceance Creek Road
Cathedral Bluffs Project - Site
Piceance Creek
DE BEQUE
PALISADE
CLIFTON
GRAND JUNCTION
FRUITA
Colorado River
MESA COUNTY
Douglas Pass
RANGELY
White River
To Vernal 26 mi.
DINOSAUR
To Craig
13
64
40
139
82
133
6
24
I-70
COLORADO
UTAH
CATHEDRAL BLUFFS PROJECT
Study Area
N
SCALE
0
10
20
miles
prepared by:
valeu & associates

The population of the communities of Rangely, Silt, New Castle, Glenwood Springs, and Carbondale has stabilized since mid-1982. Between 1980 and 1982, Rangely's population increased approximately 20 percent, due primarily to construction associated with Western Fuels' Deserado Coal Mine and Railroad Project and oil and gas development. Due to the projected construction completion of the Deserado Coal Mine in October 1983 and the depressed oil and gas industry, Rangely's population has leveled off over the last twelve months at about 2,500 persons.

Tourism is the major industry which has influenced growth in and around Glenwood Springs. In 1983, the Glenwood Springs area had an estimated population of 7,500 persons; the city of Glenwood Springs, 5,200 persons, and within a two-mile radius, 2,300 persons. The population has remained at this level over the last year.

Silt and New Castle are two small towns located between Rifle and Glenwood Springs (Figure 3.1-1). Silt and New Castle had an estimated 1983 population of 1,250 and 650 persons respectively. The town of Carbondale is located approximately 10 miles south of Glenwood Springs. Due to the current soft tourism and coal mining markets, Carbondale's 1983 estimated population of 2,350 persons represents a slight decline from 1982.

3.1.3.2.1 Town of Meeker

Table 3.1-2 depicts a summary of Meeker's housing supply by dwelling unit type.

TABLE 3.1-2

MEEKER HOUSING SUPPLY BY DWELLING UNIT TYPE
APRIL 1983

Type of Dwelling	Number of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	701	12	1.7
Multi-Family	206	98	47.6
Mobile Home Spaces	116	4	3.4
TOTAL	1,023	114	11.1

Source: Rio Blanco County Development Department

Data presented in Table 3.1-2 indicates 11.1 percent (114 units) of Meeker's 1,023 total dwelling units were vacant in April 1983. The majority of the vacancies were in the multi-family category, with 98 of the 206 units vacant. It should be noted the 701 single-family units include 114 townhouses. Town officials indicated the August vacancy level has probably increased another 3 to 4 percent, or 40 units, since April 1983.

The vast majority of the vacant platted lots in Meeker are located in Sanderson Hills PUD and Sage Hills Subdivision. Sanderson Hills has a housing unit capacity for an additional 350 dwelling units; currently contains 44 single-family and 18 townhome units. Sage Hills, a 92 lot single-family subdivision, contained 11 single-family units in September 1983. The Town is considering annexing 1,371 acres east of Meeker, known as the Meeker Terrace PUD. The development of the Meeker Terrace PUD is projected in phases, which ultimately could accommodate over 5,000 dwelling units.

Meeker requires land developers to comply with zoning and subdivision regulations. Meeker is negotiating a referral agreement with Rio Blanco County that stipulates joint review of proposed developments within a three-mile radius of the Town's corporate limits. The referral agreement is currently under review by the Meeker Planning Commission and the Meeker Town Council.

3.1.3.2.2 Town of Rangely

The 1983 population of Rangely is estimated to be 2,500, an increase of 18.3 percent over the 1980 population. The 1980 Census of Housing shows that the Town had 743 permanent housing units. The 1983 estimate of permanent housing shows 934 units, an increase of 25.7 percent over the three year period.

TABLE 3.1-3

RANGELY HOUSING SUPPLY BY DWELLING UNIT TYPE
AUGUST 1983

Type of Dwelling	No. of Units	No. of Units Vacant	Percent Vacant
Single-Family	532	37	7.0
Duplex	38	9	23.7
Multi-Family	135	26	19.3
Mobile Home	229	5	2.2
TOTAL	934	77	8.2

Source: Valeu & Associates, Inc.
Town of Rangely

Slightly over 8 percent, or 77, of Rangely's permanent housing units were vacant in August 1983. Excluding 15 units under construction, the overall vacancy rate decreased to 6.5 percent. The highest vacancies were among duplexes and multi-family units, with 23.7 and 19.3 percent, respectively.

Rangely is surrounded by federally-owned land managed by the Bureau of Land Management. In spite of this, the Town has developed an annexation policy which may eventually expand the corporate limits to 10 square miles.

In August 1983, there were four residential subdivisions planned for development in Rangely, with a total capacity for 800 permanent housing units. An additional capacity for approximately 400 residential units has been platted. Over 60 percent of this platted capacity is within the LaMesa Subdivision developed by Western Fuels for its Deserado Coal Mine operational workers. LaMesa Subdivision Phases I and III contain developed infrastructure for approximately 150 dwelling units.

Rangely has developed a number of planning tools to ensure orderly growth, including ordinances governing annexation, zoning, subdivision development, planned unit development, and site plans. At the present time, the Town is strengthening development ordinances and policies in anticipation

of additional growth and to reflect current development techniques. Rangely and Rio Blanco County have a referral agreement that stipulates joint review of proposed developments within a 3-mile radius of the Rangely corporate limits and 400 feet inside the Town boundary. Long-range planning activities are also reviewed by the Planning Commission of both entities to ensure coordination.

3.1.3.2.3 City of Rifle/Unincorporated Area

The estimated population of Rifle and the two-mile unincorporated area surrounding the City is 5,000 persons. Rifle represents approximately 85 percent of this population, or 4,200 persons. Table 3.1-4 indicates 2,349 dwelling units were located within the Rifle Area in August 1983.

TABLE 3.1-4

RIFLE AREA HOUSING SUPPLY BY DWELLING UNIT TYPE
AUGUST 1983

Type of Dwelling	No. of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	1,098	74	6.7
Duplex	116	33	28.4
Multi-Family	481	185	38.5
Townhouse/Condominiums	139	68	48.9
Mobile Home Spaces	515	93	18.1
TOTAL	2,349	453	19.3

Sources: City of Rifle
Cathedral Bluffs Shale Oil Company

The City of Rifle contains 83.7 percent, or 1,976, of the units/spaces depicted in Table 3.1-4. The remaining 373 units were located in the unincorporated area surrounding Rifle. Of Rifle's 1,976 residential units, 19.3 percent were vacant in August, compared with 7 percent in April 1983.

Rifle had 369 vacant dwelling units in August 1983, depicted as follows: single-family (71), duplex (33), multi-family (185), townhouse/condominium (68), and mobil home spaces (12). Other than 3 single-family units, 100 percent of the vacant single-family, duplex, multi-family, and townhome/ condominium units were located in the City of Rifle.

TABLE 3.1-5

RIFLE VACANT PLATTED RESIDENTIAL DEVELOPMENT LOTS
AUGUST 1983

Name of Subdivision	Total No. of Vacant Undeveloped Lots[1]	Vacant Undeveloped Lots by Dwelling Type and Status					
		Single-Family	Status	Multi-Family	Status	Mobile Home Spaces	Status
Creek Meadows	126	48	With W/S/St[2]	78	48 With W/S/St 30 Without W/S/St	0	
Creekside (Townhomes)	35	0		35	With W/S/Without St	0	
Deerfield	628	0		464	Without W/S/St	164	Without W/S/St
Highland East	155	74	With W/S/Without St	81	Without W/S/St	0	
Jackson Heights (Senior Housing)	48	0		48	With W/S/Without St	0	
Knollridge	228	70	Without W/S/St	158	Portion with W/S	0	
The Meadows	400	0		400	Without W/S/St	0	
The Pastures	98	43	With W/S/Without St	55	With W/S/Without St	0	
Palimino Park	118	52	With W/S/Without St	66	With W/S/Without St	0	
Rimrock Phase I	1,322	354	100 With W/S/St 254 Without W/S/St	968	100 With W/S/St 868 Without W/S/St	0	
Shetland Acres	127	48	Without W/S/St	79	Without W/S/St	0	
TOTAL	3,285	689		2,432		164	

[1] An additional 83 vacant undeveloped lots are located in small subdivisions containing less than 30 lots.

[2] The abbreviations are represented as follows: W-Water, S-Sewer, and St-Streets.

SOURCES: City of Rifle Planning Department
Cathedral Bluffs

Almost 90 percent of the vacant mobile home spaces (81) were located in the Rifle unincorporated area. The two largest areas were Cottonwood Mobile Home Park, east of Rifle; and Rifle Village Falls Metro District, south of Rifle. In August 1983, Cottonwood Park had 81 vacant mobile home spaces out of 300. Two mobile home parks adjacent to Highway 6 and Highway 24 containing 30 spaces were 100 percent occupied.

In Rifle, approved platted subdivisions contain vacant lots sufficient to accommodate over 3,300 dwelling units. Table 3.1-5 depicts the vacant lots in Rifle's major subdivisions and their development status. Data illustrated in Table 3.1-5 indicates the vacant platted lot development status as being in three categories: with water, sewer, streets; with water, sewer, without streets; or without water, sewer, streets. Overall, 9.0 percent, or 296 of Rifle's vacant platted lots are developed with complete infrastructure. Approximately 16.2 percent, or 531 lots were developed with water and sewer but without streets in August 1983. Finally, the vast majority of the vacant lots, 2,458 or 74.8 percent, were undeveloped. Data presented in Table 3.1-5 depicts a large development capacity surplus, but suggests Rifle developers are hedging the construction of the subdivision infrastructure.

3.1.3.2.4 Town of Silt

The estimated population of the town of Silt is 1,250 persons. Silt had a total of 455 housing units, of which 17, or 3.7 percent, were vacant in mid-August 1983.

TABLE 3.1-6

SILT HOUSING SUPPLY BY DWELLING UNIT TYPE
AUGUST 1983

Type of Dwelling	Number of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	228	7	3.1
Duplex	9	1	11.1
Multi-Family	58	0	0.0
Townhome/Condominium	21	6	28.6
Mobil Home Spaces	139	3	2.2
TOTAL	455	17	3.7

Source: Crane & Associates

Over 150 single-family lots were platted in six unincorporated areas near Silt, with most of the lots developed. In Silt, four major subdivisions are platted with vacant lots available for development. Three of these subdivisions; Center Development, Stevens Development, and Tera PUD have infrastructure in place, with the fourth subdivision (Riverview PUD) undeveloped. The Riverview PUD is planned to accommodate 167 single-family homes. The three developed subdivisions have a capacity for approximately 500 dwelling units: 20 single-family and 480 multi-family units. In mid-August 1983, 100 percent of the single-family lots were occupied, compared with 15 percent, or 70, of the multi-family lots.

3.1.3.2.5 Town of Parachute/Battlement Mesa Area

The town of Parachute and the Battlement Mesa area are physically divided by the Colorado River. Parachute, formerly Grand Valley, was a small incorporated town of less than 300 persons in the late 1970's. With the development of the Union Oil Shale Project in the early 1980s, Parachute grew to nearly 1,000 persons. Due to the construction completion of the Union Project, Parachute's current population has declined to an estimated 600 persons. Battlement Mesa was developed by Exxon to accommodate projected in-migrating construction and operational workers associated with its Colony Oil Shale Project. Battlement Mesa was designed as a new community and projected to accommodate over 10,000 persons. Today, due to the shutdown of the Colony Shale Oil Project, Battlement Mesa contains an estimated 300 persons. Battlement Mesa remains as an unincorporated settlement owned by Exxon.

In early September 1983, Parachute had a total of 389 dwelling units/spaces, of which 170, or 43.7 percent were vacant.

TABLE 3.1-7

PARACHUTE HOUSING SUPPLY BY DWELLING UNIT TYPE
SEPTEMBER 1983

Type of Dwelling	Number of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	82	4	4.9
Multi-Family	196	144	73.5
Townhome/Condominium	25	2	8.0
Mobile Home Spaces	86	20	23.3
TOTAL	389	170	43.7

Source: Valeu & Associates, Inc.

Union Oil Shale owns and operates a 192-unit apartment complex (Vista Del Rio) and 38-space mobile home park in Parachute. Approximately 95 percent, or 160, of Parachute's vacant units/spaces are owned by Union Oil Shale. In mid-August 1983, Union's operational workforce was 473 and projected to reach its peak of 550 workers in mid-1984. It appears Parachute's multi-family vacancies will remain high through 1983, since only 78 operational employees are not already on-site.

Over 80 percent of Battlement Mesa's 1,271 units/spaces were vacant on September 1, 1983, as depicted in Table 3.1-8.

TABLE 3.1-8

BATTLEMENT MESA HOUSING SUPPLY BY DWELLING UNIT TYPE
SEPTEMBER 1, 1983

Type of Dwelling	Number of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	65	31	47.7
Multi-Family	284	228	80.3
Mobile Homes	282	230	82.1
Mobile Home Spaces (Family-Status)	178	77	43.3
Mobile Home Spaces (Single-Status)	462	462	100.0
TOTAL	1,271	1,028	80.9

Source: Cathedral Bluffs

The entire community of Battlement Mesa was developed by Exxon in the early 1980's. Today, Exxon continues to own and manage all but 31 single-family units in Battlement Mesa. There are two apartment complexes in Battlement Mesa: Willow Ridge, 144 units; and Willow Park, 140 units; with a cumulative occupancy of 26 units. Over 80 percent of Exxon's 282 mobile homes were vacant on September 1, 1983. Infrastructure is in place for an additional 640 mobile home spaces. Only 101 of these spaces were occupied in early September. The 462 single-status spaces represent an area originally designed to accommodate a construction mancamp, with eventual conversion to mobil home spaces.

3.1.3.2.6 City of Glenwood Springs

Glenwood Springs is the largest incorporated entity in Garfield County and the county seat. The 1983 population of the city of Glenwood Springs is estimated to be 5,200 persons, an increase of 563, or 12.1 percent, over the 1980 population. An additional 2,300 persons are estimated to be located within two miles of the corporate limits. The City had a total of 2,317 housing units, of which 106, or 4.6 percent, were estimated to be vacant in mid-1983.

TABLE 3.1-9

GLENWOOD SPRINGS HOUSING SUPPLY BY DWELLING UNIT TYPE
1983

Type of Dwelling	Number of Units	No. of Units Vacancy*	Percent Vacant
Single-Family	1,207	48	4.0
Multi-Family	815	49	6.0
Mobile Homes	295	9	3.0
TOTAL	2,317	106	4.6

* The number of vacant units were based on realtor estimates.

Sources: Cathedral Bluffs
Valeu & Associates, Inc.

As a tourism hub in central Colorado, Glenwood Springs' housing inventory contains a high percentage of rental units. The vast majority of the multi-family units are condominium units for this transient population. Due to the large influx of people for short periods of time, it is difficult to measure the actual housing vacancy level. The vacancy rates depicted in Table 3.1-9 represent current estimates provided by local realtors.

3.1.3.2.7 Town of New Castle

The 1983 population of the town of New Castle is estimated to be 650 persons, an increase of 87 persons, or 15.4 percent, over the 1980 population. New Castle had a total of 260 dwelling units, of which 12, or 4.6 percent, were estimated to be vacant in early October 1983.

TABLE 3.1-10

NEW CASTLE HOUSING SUPPLY BY DWELLING UNIT TYPE
OCTOBER 1983

Type of Dwelling	Number of Units	No. of Units Vacant*	Percent Vacant
Single-Family	203	8	3.9
Duplex	8	0	---
Townhome/Condominium	24	2	8.3
Mobile Homes	25	2	8.0
TOTAL	260	12	4.6

* The number of vacant units was estimated by the Town Clerk.

Source: Valeu & Associates, Inc.

The data presented in Table 3.1-10 indicate the vast majority of New Castle's dwelling units are owner-occupied, with a low vacancy rate. It should be noted there is a mobile home development located two miles south of New Castle containing 360 spaces/lots. The development includes a mobile home park (Apple Tree Park) and mobile home subdivision (Mountain

Shadows Subdivision) with 285 spaces and 75 lots, respectively. All but 10 lots were occupied as of October 5, 1983.

In New Castle, there are two major subdivisions with residential lots available; both currently under development. In June 1983, the Town annexed 658 acres known as the Castle Valley Ranch. New Castle has approved Phase I of this development, which can accommodate 60 residential units; the subdivision infrastructure is not in place. The second subdivision, Elk Creek PUD is under consideration by the Planning Commission and could accommodate 20 dwelling units.

3.1.3.2.8 Town of Carbondale

The 1983 population of Carbondale is estimated to be 2,350 persons, an increase of 266 persons, or 12.8 percent, over the 1980 population. According to the 1980 Census of Housing, Carbondale had 830 dwelling units. The Town building records indicate 136 residential units have been permitted between January 1980 and October 1983. Thus, Carbondale had approximately 966 dwelling units on October 1, 1983, of which 32, or 3.3 percent, were estimated to be vacant.

TABLE 3.1-11

CARBONDALE HOUSING SUPPLY BY DWELLING UNIT TYPE
OCTOBER 1983

Type of Dwelling	No. of Units*	No. of Units Vacant*	Percent Vacant
Single-Family	578	10	1.7
Townhome/Condominium	116	8	6.9
Multi-Family	198	12	6.0
Mobile Homes	74	2	2.7
TOTAL	966	32	3.3

* The number of dwelling units by type and vacancies were estimated based upon information provided by the Carbondale Planner.

Source: Valeu & Associates, Inc.

There is no shortage of platted land for residential development in Carbondale. Currently, the Town is considering the annexation of an area known as the Gray Ranch PUD, which could accommodate up to 600 dwelling units. Two existing platted subdivisions in Carbondale, Crystal Village and Roaring Fork Village, have infrastructure in place to accommodate 100 and 120 units, respectively. In an attempt to ensure orderly development, Carbondale has adopted a Comprehensive Growth Plan, including zoning and subdivision regulations.

3.1.3.2.9 Summary

The aggregate housing stock depicted in this section for the eight incorporated entities and one unincorporated area (Battlement Mesa) represents approximately 65 percent of the Study Area's current dwelling units. This existing inventory will be an attractive housing supply for in-migrating Cathedral Bluffs employees. Table 3.1-12 depicts the nine entities aggregate housing stock and vacant dwelling units, as of mid-1983.

TABLE 3.1-12

AGGREGATE HOUSING SUPPLY BY DWELLING UNIT TYPE
MID-1983

Type of Dwelling	No. of Units/Spaces	No. of Units/ Spaces Vacant	Percent Vacant
Single-Family	4,687	224	4.8
Duplex	171	43	25.1
Multi-Family	2,373	742	31.3
Townhome/Condominium	332	93	28.0
Mobile Homes	1,130	271	24.0
Mobile Home Spaces	1,271	636	50.0
TOTAL	9,964	2,009	20.2

Sources: Valeu & Associates, Inc.
Cathedral Bluffs

Of a total housing stock of 9,964 units, Table 3.1-12 indicates 20.2 percent, or 2,009 units/spaces are vacant. It should be noted nearly 90 percent, or 1,765 of the vacant units/spaces, were located within Rifle, Parachute/Battlement Mesa, and Meeker. Nearly 60 percent of the vacant dwelling units/spaces were located in Battlement Mesa and Parachute. Battlement Mesa's 1,028 vacant units/spaces represent over 51 percent of the aggregate vacancies.

Because the housing stock included in this analysis represents only that stock in communities, it can be assumed there are additional vacant units/spaces in rural areas which may also be available.

3.1.3.3 RESIDENTIAL DEVELOPMENT CAPACITY

The future residential development capacity of the Study Area can be assessed in part from past production trends. In 1970, the Study Area (Garfield and Rio Blanco Counties) had 7,565 permanent housing units. Between 1970 and 1980, the permanent housing stock increased 4,304 units, or 56.9 percent, to 11,869 units. It is estimated the Study Area's permanent housing inventory increased an additional 2,735 units, or 23 percent, from 1980 to 1983.

Study Area housing development is reflected by the number of building permits issued. Table 3.1-13 presents a history of building permit activity from 1980 through September 30, 1983, in the Study Area's eight incorporated entities and Rio Blanco County and Garfield County unincorporated areas. The building permit total is not an exact reflection of the number of new dwelling units added to the Study Area inventory because: 1) in Rifle and Silt, in 1980 and 1981, the building permit numbers represent averages because of incomplete records; 2) mobile home units were not included in all community totals; and 3) the multi-family numbers in Garfield County represent the number of building permits rather than the actual number of units constructed.

TABLE 3.1-13

HISTORY OF RESIDENTAL BUILDING PERMITS FOR STUDY AREA ENTITIES

	1980	1981	1982	Through September 30 1983
Meeker	39	24	6	3
Rangely				
Single Family	NA	24	45	3
Multiple Family	NA	38	62	6
Rio Blanco County				
Unincorporated Area[1]				
Single Family	31	34	25	13
Mobile Home	22	38	19	14
Subtotal	92	158	157	39
Parachute				
Single Family[2]	NA	23	21	0
Multiple Family	NA	231	0	0
Rifle	120 (Avg)	544 (Avg)	62	11
Silt	35 (Avg)	35 (Avg)	43	8
New Castle[3]	2	10	18	3
Glenwood Springs	246	28	39	15
Carbondale	28	68	28	12
Garfield County				
Unincorporated Area[4]				
Single Family[5]	119	187	157	57
Multiple Family[6]	2	42	95	--
Subtotal	552	1,168	463	106
TOTAL	664	1,326	620	145

[1] Rio Blanco County issues building permits only in the unincorporated portion of the County.

[2] Represents conventional single-family and townhome units.

[3] Building permits represent single-family and condominium units estimated by Town Clerk.

[4] Garfield County building permits cover the unincorporated portion of the County, including Battlement Mesa.

[5] Single-family includes both conventional and mobile home units for 1980-1982 and includes single-family, multi-family, and mobile homes in 1983.

[6] Repreents number of building permits issued rather than number of units.

Sources: Building Inspection Departments
Cathedral Bluffs
Valeu & Associates, Inc.

Data presented in Table 3.1-13 clearly illustrate the decline in residential development in 1983. In the first four years of this decade, the peak residential permit activity occurred in nine out of the ten entities in 1981 and 1982. The most dramatic construction increase and subsequent decrease occurred in Rifle, Parachute, and the Garfield County unincorporated area due to the Colony and Union Oil Shale Projects. In 1981 and 1982, the vast majority of the Garfield County unincorporated area residential construction took place in Battlement Mesa.

Residential development in Meeker, Rangely, and the unincorporated portion of Rio Blanco County was not significantly influenced by the Union and Exxon oil shale projects. Most residential construction which occurred in Rio Blanco County was in response to area oil and gas development and construction of the Deserado Coal Mine (10 miles northwest of Rangely) and railroad connecting to the Bonanza Power Plant in Utah. As a result of the depressed oil and gas market and projected construction completion of the coal mine and railroad in October 1983, the number of residential permits declined through late 1982 and 1983. The Deserado Coal Mine operational workforce is projected to increase from the current 76 workers to 400 in 1985, when the Bonanza Power Plant Unit I reaches its full capacity. Due to this operational workforce buildup, the three Rio Blanco County entities, especially Rangely, expect residential development to increase in 1984.

The communities of Silt, New Castle, Glenwood Springs, and Carbondale experienced moderate residential growth in the early 1980s. Glenwood Springs' 1980 housing stock expansion of 246 units represent condominium units primarily associated with the transient in-migrating population. However, in no year did these communities experience a rapid residential build up similar to Rifle and Parachute. The primary cause of Parachute's growth was the Union Oil Shale Project. Over 90 percent of the building permits issued in Parachute in the last three years can be attributed to numerous energy projects in the region. Rifle's proximity to the Union, Exxon, and Cathedral Bluffs Shale Oil projects and ability to provide support services made it ripe for residential expansion. Rifle's housing stock increased over 36 percent since 1980.

Similar to Parachute, residential growth in the unincorporated area of Garfield County was a direct result of the Colony Oil Shale Project. The vast majority of the Garfield County unincorporated area permits occurred in Battlement Mesa, which was developed between 1980 and 1982. For example, Battlement Mesa currently contains approximately 630 dwelling units, which compares with 659 residential permits issued in the Garfield County unincorporated area between 1980 and October 1983.

Table 3.1-13 clearly indicates that building activity among the Study Area entities has drastically decreased in 1983. Through September 30, 1983, only 145 dwelling units have been permitted. At this rate, the number of residential units constructed in the Study Area will decline over 400 units from 1982, or nearly 70 percent.

The history of residential development in the Study Area suggests the housing industry has the capacity to respond to future energy project housing needs.

3.2 DEMOGRAPHIC ANALYSIS

3.2 DEMOGRAPHIC ANALYSIS

Because of the uncertainty concerning the further development of the Union Oil Company Parachute Creek Oil Shale Project, and the effect of that development upon the CB Project area, two complete demographic analyses have been prepared. The first case includes the Union project at its present level of development, with future production at approximately 10,000 barrels per day. This scenario is considered to be the more likely level of development, so the socioeconomic analysis and mitigation program focuses upon this scenario. The second case includes the planned development of the Union project to its full design capacity (approximately 90,000 barrels per day). The high level analysis (high case) is contained in Volume II.

A complete listing of the individual economic activities which were incorporated in both the baseline and the cumulative forecasts is contained in the Demographic Assumptions section of Volume II. These economic activities include each sector of the local economy in Rio Blanco, Garfield, Mesa, and Moffat counties, and specific industrial projects which are expected to contribute significant employment to the area. The only developed shale project included in the baseline forecast is the Union Oil project. The Colony Oil Shale Project and the CB Project are included in the baseline forecast only to the extent that they have been developed to date, with no future development of either project included in the forecast.

The only difference between the baseline forecast and the cumulative forecast is simply the inclusion of the CB Project.

3.2.1 BASELINE EMPLOYMENT FORECAST

The baseline employment forecast for Rio Blanco County is shown in Table 3.2-1. The forecast indicates a steady growth in employment of about 2.5 percent per year.

In Garfield County, baseline employment peaked in 1982 due primarily to construction of the Union Oil Shale Project - Phase I. Without further development of the Union project, Garfield County employment is expected to continue to decline through 1986 and then begin a very modest rate of growth, generally less than one percent annually, through the year 2000. The baseline employment forecast by sector for Garfield County is displayed in Table 3.2-2.

Employment in the agricultural sector in both counties is expected to continue a pattern of decline. Mining and construction employment will experience the most significant changes in both counties.

TABLE 3.2-1

RIO BLANCO COUNTY TOTAL EMPLOYMENT BY SECTOR
(BASELINE CASE)

YEAR	AG PROPRI-ETORS	AG LABOR	MINING	CONSTRUC-TION	MANUFAC-TURING	TCPU	TRADE	FIRE	SERVICES	GOVERN-MENT	OTHER	TOTAL
1983	180	90	590	560	90	250	500	110	260	250	550	3430
1984	170	90	920	360	80	300	510	120	280	270	550	3650
1985	170	90	1040	310	80	310	520	120	280	280	560	3760
1986	170	90	1090	310	80	320	530	120	280	300	570	3860
1987	170	90	1130	320	80	320	540	120	290	310	570	3930
1988	170	80	1150	320	80	320	550	120	290	320	580	3980
1989	160	80	1180	320	80	320	550	120	300	330	580	4020
1990	160	80	1200	320	80	340	560	130	300	340	590	4110
1991	160	80	1220	330	80	350	570	130	310	340	590	4150
1992	160	80	1240	330	80	350	570	130	310	350	590	4190
1993	160	80	1260	330	80	350	570	130	310	360	600	4230
1994	160	80	1280	330	80	350	580	130	320	360	600	4270
1995	150	80	1300	330	90	350	580	130	320	370	610	4310
2000	150	70	1380	340	90	360	610	130	340	390	620	4480

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

TABLE 3.2-2

GARFIELD COUNTY TOTAL EMPLOYMENT BY SECTOR
(BASELINE CASE)

YEAR	AG PROPRI-ETORS	AG LABOR	MINING	CONSTRUC-TION	MANUFAC-TURING	TCPU	TRADE	FIRE	SERVICES	GOVERN-MENT	OTHER	TOTAL
1983	350	210	910	1460	280	890	2710	460	2250	2370	1660	13550
1984	350	200	950	1120	270	900	2690	450	2250	2340	1650	13170
1985	340	200	980	1110	260	890	2640	450	2200	2270	1620	12960
1986	340	200	980	930	260	900	2660	440	2210	2250	1620	12790
1987	340	200	980	930	260	910	2680	440	2210	2240	1620	12810
1988	330	190	980	950	270	930	2710	440	2240	2250	1630	12920
1989	330	190	980	960	270	940	2750	450	2280	2260	1650	13050
1990	330	190	980	970	270	960	2790	450	2310	2270	1660	13190
1991	320	190	980	980	280	960	2830	450	2340	2280	1670	13290
1992	320	190	980	990	280	970	2860	460	2370	2290	1690	13390
1993	320	190	980	1000	280	980	2900	460	2400	2300	1700	13500
1994	310	180	980	1010	290	980	2930	460	2430	2310	1710	13600
1995	310	180	980	1020	290	990	2970	460	2470	2320	1720	13710
2000	290	170	980	1060	310	1010	3160	480	2640	2380	1790	14280

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

3.2.2 BASELINE POPULATION FORECAST

The baseline population forecast for all Rio Blanco County jurisdictions within the project area is shown in Table 3.2-3. Total population levels in Rio Blanco County coincide closely with employment levels. Total population in Meeker and its surrounding special districts demonstrate a small but steady increase on an annual basis.

The baseline population forecast shown in Table 3.2-4 indicates a declining population level in Garfield County jurisdictions from 1983-1986. After 1986, these jurisdictions are expected to increase in population at a very modest rate of less than one percent annually.

TABLE 3.2-3

TOTAL POPULATION FOR RIO BLANCO COUNTY JURISDICTIONS
(BASELINE CASE)

YEAR	TOTAL COUNTY	MEEKER	MEEKER SANITATION DISTR.	MEEKER LIBRARY DISTRICT	MEEKER RURAL FIRE DISTRICT	E.RIO BLANCO REC. DISTRICT
1983	7300	2450	2660	3830	3830	3830
1984	7650	2480	2690	3850	3850	3850
1985	7720	2510	2710	3880	3880	3880
1986	7940	2580	2790	4000	4000	4000
1987	8350	2710	2940	4200	4200	4200
1988	8470	2750	2980	4260	4260	4260
1989	8600	2800	3020	4330	4330	4330
1990	8800	2860	3090	4430	4430	4430
1991	8890	2890	3130	4470	4470	4470
1992	8980	2920	3160	4520	4520	4520
1993	9060	2940	3190	4560	4560	4560
1994	9150	2970	3220	4600	4600	4600
1995	9220	3000	3240	4640	4640	4640
2000	9460	3070	3330	4760	4760	4760

Source: Crane & Associates, using the PAS Model

TABLE 3.2-4

TOTAL POPULATION FOR GARFIELD COUNTY JURISDICTIONS (BASELINE CASE)

YEAR	TOTAL COUNTY	RIFLE	SILT	PARACHUTE	GRAND RIVER HOSPITAL DISTRICT	RIFLE RURAL FIRE DISTRICT	SILT/NEW CASTLE RURAL FIRE DIST.
1983	28530	4630	1060	500	11610	6710	4840
1984	28390	4550	1050	430	11440	6650	4860
1985	28230	4510	1030	440	11380	6620	4840
1986	28050	4500	1030	420	11080	6620	4860
1987	28120	4500	1030	420	11090	6630	4880
1988	28320	4530	1040	430	11150	6670	4920
1989	28500	4550	1040	430	11210	6710	4960
1990	28660	4580	1050	440	11270	6740	4990
1991	28800	4600	1050	440	11320	6770	5010
1992	28930	4620	1060	440	11360	6790	5040
1993	29040	4640	1060	440	11400	6820	5060
1994	29140	4650	1070	440	11430	6840	5080
1995	29230	4670	1070	440	11470	6860	5100
2000	29530	4720	1080	450	11580	6930	5170

Source: Crane & Associates, using the PAS Model

3.2.3 BASELINE SCHOOL-AGE POPULATION FORECAST

School-age population in the Meeker RE-1 School District is expected to increase by 120 from 1983-1990, and to remain relatively stable throughout the remainder of the forecast period as indicated in Table 3.2-5. The number of elementary age children as a percentage of the total is expected to decline while junior high school and high school age children should increase. The projection considers the trend toward declining birth rates and family size.

Table 3.2-6 displays the forecast for school-age population for the two Garfield County school districts. District RE-2 is expected to increase slowly in school-age population through 1994 and then to experience declining school-age population through the year 2000. District RE-16 is expected to decline in school-age population by about 100 from 1983-1986 and to then experience a period of population stability.

TABLE 3.2-5

SCHOOL-AGE POPULATION FOR MEEKER SCHOOL DISTRICT RE-1
(BASELINE CASE)

YEAR	ELEMENTARY (5-10 YEARS)	JR.HIGH (11-14 YEARS)	SR. HIGH (15-18 YEARS)	TOTAL
1983	400	280	220	900
1984	410	270	220	900
1985	420	270	230	920
1986	430	270	240	940
1987	450	270	250	970
1988	460	270	260	990
1989	470	280	260	1010
1990	470	280	260	1010
1991	460	300	260	1020
1992	460	310	260	1030
1993	440	310	270	1020
1994	420	320	280	1020
1995	410	320	290	1020
2000	370	290	310	970

Source: Crane & Associates, using the PAS Model

TABLE 3.2-6

SCHOOL-AGE POPULATION FOR GARFIELD COUNTY SCHOOL DISTRICTS
(BASELINE CASE)

	Garfield School District RE-2				Grand Valley School District RE-16			
YEAR	ELEMENTARY (5-10 YEARS)	JR.HIGH (11-14 YRS)	SR. HIGH (15-18 YRS)	TOTAL	ELEMENTARY (5-10 YEARS)	JR. HIGH (11-14 YRS)	SR. HIGH (15-18 YRS)	TOTAL
1983	950	590	550	2090	200	150	140	490
1984	980	600	550	2130	190	140	140	470
1985	1000	610	550	2160	190	140	140	470
1986	1030	600	550	2190	160	120	110	390
1987	1050	610	560	2220	170	120	110	400
1988	1070	610	580	2250	180	120	110	410
1989	1080	620	580	2280	190	110	110	410
1990	1090	630	570	2300	190	110	110	410
1991	1040	680	580	2300	180	120	110	410
1992	1010	700	590	2300	180	120	110	410
1993	980	720	610	2310	170	130	110	410
1994	950	730	630	2310	160	130	120	410
1995	920	710	660	2290	150	120	120	400
2000	760	610	690	2060	110	100	120	340

Source: Crane & Associates, using the PAS Model

3.2.4 PROJECT EMPLOYEE RESIDENTIAL DISTRIBUTION

The laborforce requirements of the CB Project will resemble most large industrial projects; requiring a large number of construction workers over a relatively short period of time, and a permanent operating workforce which will build up during the construction period and stabilize once full production levels are reached. Figure 3.2-1 is a graphic display of the anticipated build-up of the construction and operations workforce. A peak employment of 2900 will be reached in the third quarter of 1986. After that time, construction employment will decrease rapidly toward the targeted completion of project construction in late 1988. The permanent operations workforce will be 1020 employees.

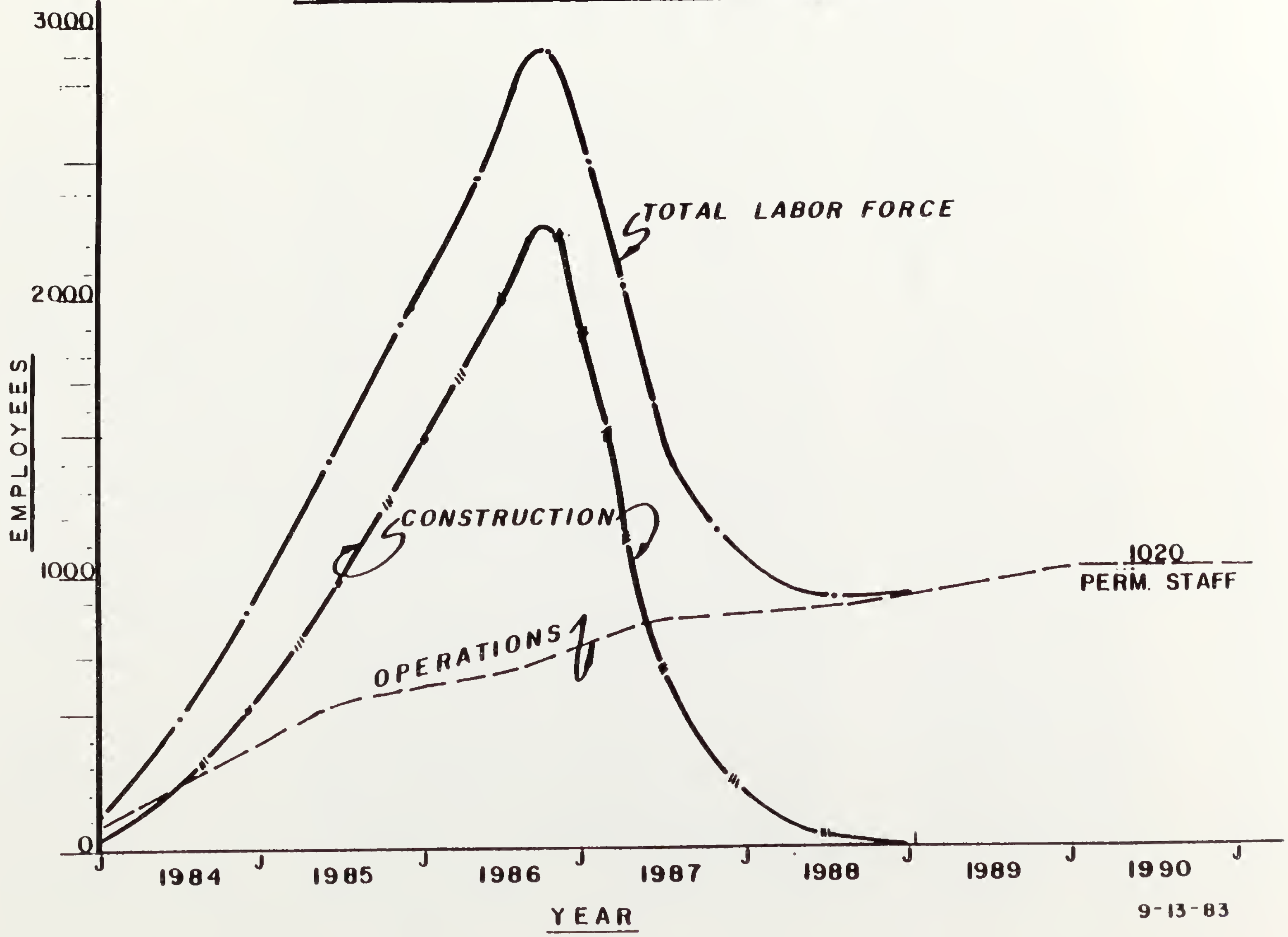
The development of the CB Project is expected to have a demographic effect upon Rio Blanco, Garfield and Mesa counties, with the most significant effect upon jurisdictions in eastern Rio Blanco and western Garfield counties. The key to the overall demographic effect of the CB Project is the number of persons expected to in-migrate as a result of the project, and the residency distribution of those in-migrants.

The number of in-migrants to the project area as a result of new jobs created by the project will be heavily influenced by the availble laborforce already residing in the area and CB's policy of hiring qualified local labor first. Research has been conducted to determine the available local labor pool and adjustments have been made accordingly to the PAS model for use in forecasting total employment and population growth as a result of the Project.

The residential distribution of employees has also been analyzed in detail in an attempt to provide an accurate forecast of growth in the Project area. Three factors were assumed to be most significant in allocating in-migrating Project workers to residences within counties and individual communities. These factors were: distance from the job site, available housing and past experience as recorded in CB Project socioeconomic monitoring reports.

FIGURE 3.2-1

CATHEDRAL BLUFFS SHALE OIL PROJECT
LABOR FORCE REQUIREMENTS



A major factor influencing available housing will be the on-site temporary housing facility provided by the Project. The on-site temporary housing facility is expected to house up to 850 construction workers at the peak of construction activity.

Based upon the distance factor and past experience, no in-migrating workers were assumed to take up residence in Mesa County, however about five percent of Project construction workers are expected to commute from Mesa County on a daily basis. Due to the small percentage of temporary workers commuting from Mesa County relative to the size of the laborforce in that county, a detailed demographic analysis of the effects of the Project upon Mesa County was not pursued.

Based upon the large amount of available housing in Garfield County, past experience when housing was plentiful in Garfield County, and the Project's plans to provide transportation during the construction period, a majority of construction employees not residing in on-site housing are expected to reside in Garfield County. The availability of housing in the Parachute/ Battlement Mesa area will be called upon to house over 600 construction employees during the peak of Project construction activities in 1986. Permanent operating employees are expected to place more importance upon living in communities close to the Project site. About 25 percent of the permanent operations workforce are expected to reside in Rio Blanco County and the remainder in Garfield County with these individuals concentrated in the communities of Meeker and Rifle. The specific assumptions concerning the allocation by place of residence of Project employees is contained in Table 3.2-7.

TABLE 3.2-7

CB PROJECT EMPLOYEE DISTRIBUTION
(BASED UPON AVERAGE ANNUAL EMPLOYMENT)

	RIO BLANCO COUNTY		GARFIELD COUNTY					MESA COUNTY
	MEEKER AREA	ON-SITE HOUSING	RIFLE AREA	SILT AREA	PARACHUTE/ BATTLEMENT MESA AREA	NEW CASTLE AREA	GLENWOOD SPRINGS AREA	GRAND JUNCTION AREA
1984								
Local Construction	28	-	64	5	5	2	2	5
Non-local Const.	37	0	91	6	11	3	1	0
Operations	42	-	108	8	3	3	3	66
1985								
Local Construction	47	-	191	12	38	6	6	16
Non-local Const.	23	451	89	5	17	5	0	0
Operations	125	-	321	25	10	10	10	21
1986								
Local Construction	70	-	187	18	149	9	9	23
Non-local Const.	126	576	123	42	481	28	28	0
Operations	162	-	416	32	13	13	13	0
1987								
Local Construction	54	-	187	21	65	7	7	18
Non-local Const.	26	509	100	6	20	3	3	0
Operations	214	-	549	42	17	17	17	0
1988								
Local Construction	22	-	49	4	4	1	1	4
Non-local Const.	4	101	9	1	0	0	0	0
Operations	218	-	560	43	17	17	17	0
1989-2000								
Operations	256	-	654	50	20	20	20	0

Source: CB Project Estimate

3.2.5 CUMULATIVE EMPLOYMENT FORECAST

As is shown in Table 3.2-8, the development of the CB Project will greatly increase employment growth in Rio Blanco County for the period 1984-1986. Peak county employment with the CB Project will be 5,190 in 1986. A large portion of the Project employment in 1984-1987 will be temporary employees residing in on-site housing. Steady state employment with CB should result in about 500 more total jobs in Rio Blanco County than under the baseline case. The majority of these increased jobs will be in the mining, construction and trade sectors.

The employment effect of the CB Project upon Garfield County will result in fewer lost jobs in 1984, and rapid employment growth in 1985 and 1986 (see Table 3.2-9). The CB Project will result in about 2900 additional jobs in Garfield County in 1986. The long term effect of the CB Project will be to increase county employment by approximately 1900.

TABLE 3.2-8

RIO BLANCO COUNTY TOTAL EMPLOYMENT BY SECTOR
(CUMULATIVE CASE)

YEAR	AG PROPRI-ETORS	AG LABOR	MINING	CONSTRUC-TION	MANUFAC-TURING	TCPU	TRADE	FIRE	SERVICES	GOVERN-MENT	OTHER	TOTAL	IMPACT
1984	170	90	960	430	80	300	540	120	280	280	560	3810	160
1985	170	90	1160	850	90	330	600	130	310	350	590	4670	910
1986	170	90	1250	1120	90	340	640	140	340	400	610	5190	1320
1987	170	90	1340	940	90	340	640	140	340	400	610	5100	1160
1988	170	80	1370	470	90	340	630	140	340	410	610	4650	670
1989	160	80	1430	340	90	340	620	140	330	400	610	4540	520
1990	160	80	1460	340	90	360	620	140	340	410	610	4610	500
1991	160	80	1480	350	90	360	630	140	340	410	620	4650	500
1992	160	80	1490	350	90	360	630	140	340	420	620	4690	500
1993	160	80	1520	350	90	360	640	140	350	420	620	4730	500
1994	160	80	1540	350	90	370	640	140	350	430	630	4770	500
1995	150	80	1560	350	90	370	650	140	360	430	630	4810	500
2000	150	70	1640	360	90	380	670	150	370	460	650	4980	500

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

TABLE 3.2-9

GARFIELD COUNTY TOTAL EMPLOYMENT BY SECTOR
(CUMULATIVE CASE)

YEAR	AG PROPRI- ETORS	AG LABOR	MINING	CONSTRUC- TION	MANUFAC- TURING	TCPU	TRADE	FIRE	SERVICES	GOVERN- MENT	OTHER	TOTAL	IMPACT
1984	350	200	1070	1310	280	900	2720	460	2250	2350	1640	13500	330
1985	340	200	1350	1530	290	920	2820	480	2360	2390	1690	14350	1390
1986	340	200	1470	2100	310	970	2990	510	2530	2520	1760	15690	2900
1987	340	200	1620	1460	310	980	3000	510	2550	2520	1760	15250	2440
1988	330	190	1640	1120	310	990	3020	510	2570	2520	1770	14970	2050
1989	330	190	1750	1050	300	1000	3010	500	2560	2510	1770	14970	1920
1990	330	190	1750	1060	300	1020	3050	510	2590	2520	1780	15090	1910
1991	320	190	1750	1070	310	1020	3080	510	2620	2530	1790	15200	1900
1992	320	190	1750	1080	310	1030	3120	510	2650	2540	1810	15300	1900
1993	320	190	1750	1090	310	1030	3150	510	2680	2550	1820	15400	1910
1994	310	180	1750	1100	320	1040	3190	520	2720	2560	1830	15510	1910
1995	310	180	1750	1110	320	1040	3230	520	2750	2570	1840	15620	1910
2000	290	170	1750	1150	340	1070	3430	540	2920	2630	1910	16210	1920

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

3.2.6 CUMULATIVE POPULATION FORECAST

The development of the CB Project will result in a substantial increase in Rio Blanco County population in 1985 and 1986 (see Table 3.2-10). Approximately 500 of the total increase in population during this time will be single-status employees residing in the construction employee housing on the Project site.

As the Project construction activity declines in 1987-1989, Rio Blanco County population will fall somewhat. Once the CB Project begins operations, the additional population in Rio Blanco County resulting from the Project will be about 1,060 persons.

Meeker will experience an added population of 1,380 persons during the peak of Project construction in 1986 (see Table 3.2-10). Meeker's population will decline after construction is completed and then begin a steady level of growth for the remainder of the forecast period.

The library, fire, recreation and sanitation districts in Rio Blanco County will experience population change very similar to that which Meeker will experience over the forecast period.

The peak population effect of the CB Project in Garfield County results in 1986, and totals 3,720 persons. The long term population growth effect on the county will be 2,900 persons. The population growth forecast for Garfield County jurisdictions is displayed in Table 3.2-11. It is assumed that a large percentage of the peak population increase in 1986 will be absorbed in Battlement Mesa because of the housing of temporary Project construction employees and a share of the induced population in that location.

The cumulative population forecasts for both counties is presented graphically in Figure 3.2-2. This figure demonstrates the anticipated population peaks related to the CB Project in Rio Blanco County and in Garfield County. The cumulative population forecasts for the four municipalities under study are displayed graphically in Figure 3.2-3.

TABLE 3.2-10

TOTAL POPULATION FOR RIO BLANCO COUNTY JURISDICTIONS (CUMULATIVE CASE)

YEAR	TOTAL COUNTY*	MEEKER	MEEKER SANITATION DISTRICT	MEEKER LIBRARY DISTRICT	MEEKER RURAL FIRE DISTRICT	E.RIO BLANCO RECREATION DISTRICT	TOTAL COUNTY IMPACT	MEEKER IMPACT
1984	7870	2690	2910	4070	4070	4070	220	210
1985	9010	3330	3560	4730	4730	4730	1290	820
1986	9950	3960	4230	5440	5440	5440	2010	1380
1987	10050	3850	4130	5390	5390	5390	1700	1140
1988	9730	3860	4140	5420	5420	5420	1260	1110
1989	9730	3880	4150	5460	5460	5460	1130	1080
1990	9850	3860	4130	5470	5470	5470	1040	1000
1991	9950	3910	4190	5530	5530	5530	1060	1020
1992	10040	3940	4220	5580	5580	5580	1060	1020
1993	10120	3960	4250	5620	5620	5620	1060	1020
1994	10210	3990	4280	5660	5660	5660	1060	1020
1995	10280	4120	4300	5700	5700	5700	1060	1020
2000	10520	4190	4390	5820	5820	5820	1060	1020

* County total includes individuals residing in on-site temporary housing, 1985-1988.

Source: Crane & Associates, using the PAS Model.

TABLE 3.2-11

TOTAL POPULATION FOR GARFIELD COUNTY JURISDICTIONS
(CUMULATIVE CASE)

YEAR	TOTAL COUNTY	RIFLE	SILT	PARACHUTE	GR. RIVER HOSPITAL DISTRICT	RIFLE RURAL FIRE DISTRICT	SILT/N.CASTLE RURAL FIRE DISTRICT	TOTAL COUNTY IMPACT	RIFLE IMPACT	SILT IMPACT	PARACHUTE IMPACT	BATTLEMENT MESA IMPACT
1984	28650	4770	1060	450	11690	6870	4870	260	220	10	20	6
1985	29280	5290	1080	480	12380	7400	4890	1050	780	50	40	70
1986	31770	6160	1250	510	14610	8280	5080	3720	1660	220	90	1600
1987	31110	6550	1180	500	13930	8680	5030	2990	2050	150	80	560
1988	31070	6460	1180	510	13760	8600	5060	2750	1930	140	80	470
1989	31270	6660	1180	510	13840	8820	5100	2770	2110	140	80	250
1990	31470	6720	1190	520	13940	8850	5250	2810	2140	140	80	250
1991	31700	6810	1200	520	14080	8910	5280	2900	2210	150	80	250
1992	31830	6830	1210	520	14120	9000	5310	2900	2210	150	80	250
1993	31940	6850	1210	520	14160	9030	5330	2900	2210	150	80	250
1994	32040	6860	1220	520	14190	9050	5350	2900	2210	150	80	250
1995	32130	6880	1220	520	14230	9070	5370	2900	2210	150	80	250
2000	32430	6930	1230	530	14340	9140	5440	2900	2210	150	80	250

Source: Crane & Associates, using the PAS Model.

FIGURE 3.2-2

COUNTY CUMULATIVE POPULATION FORECAST

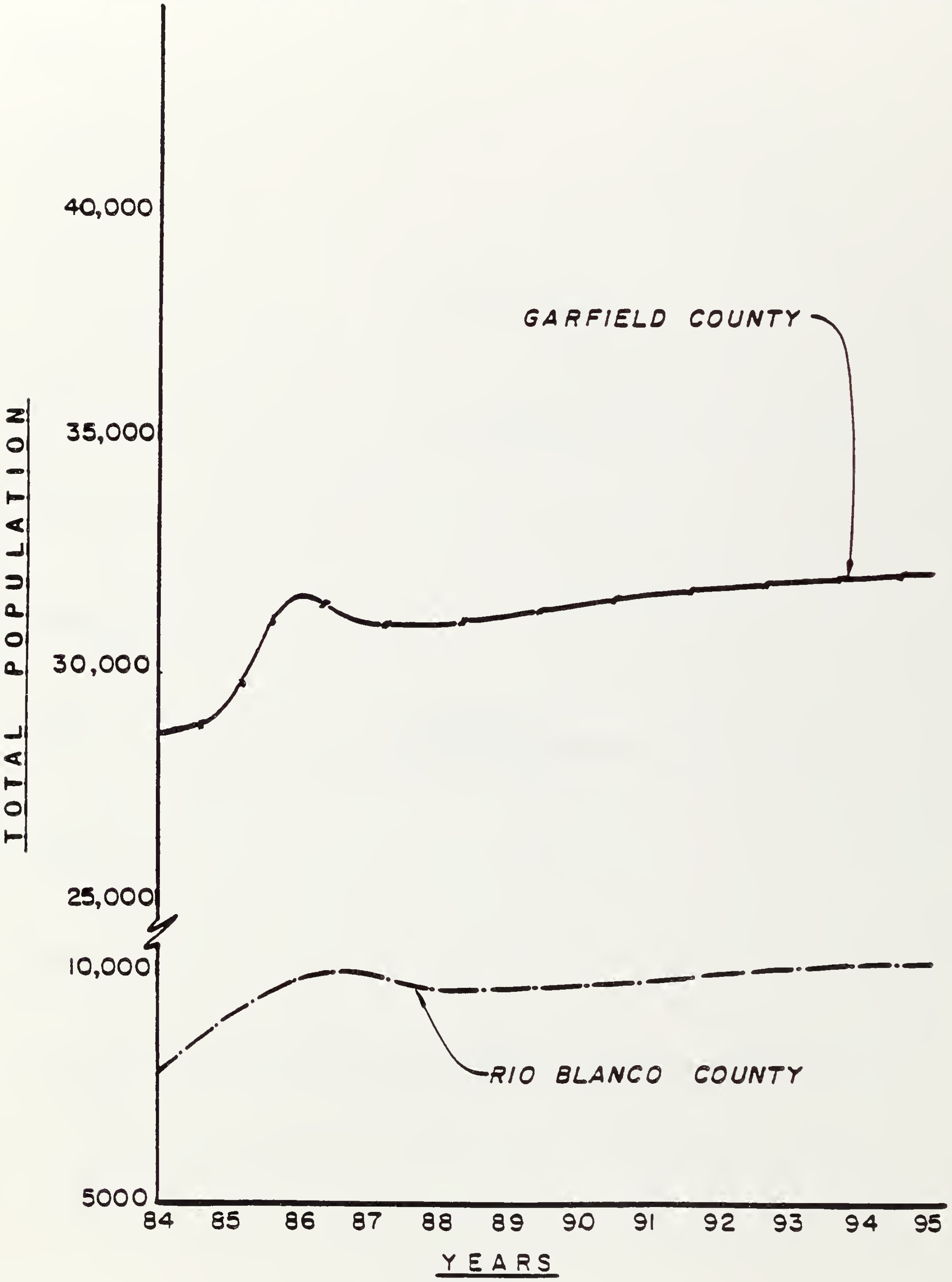
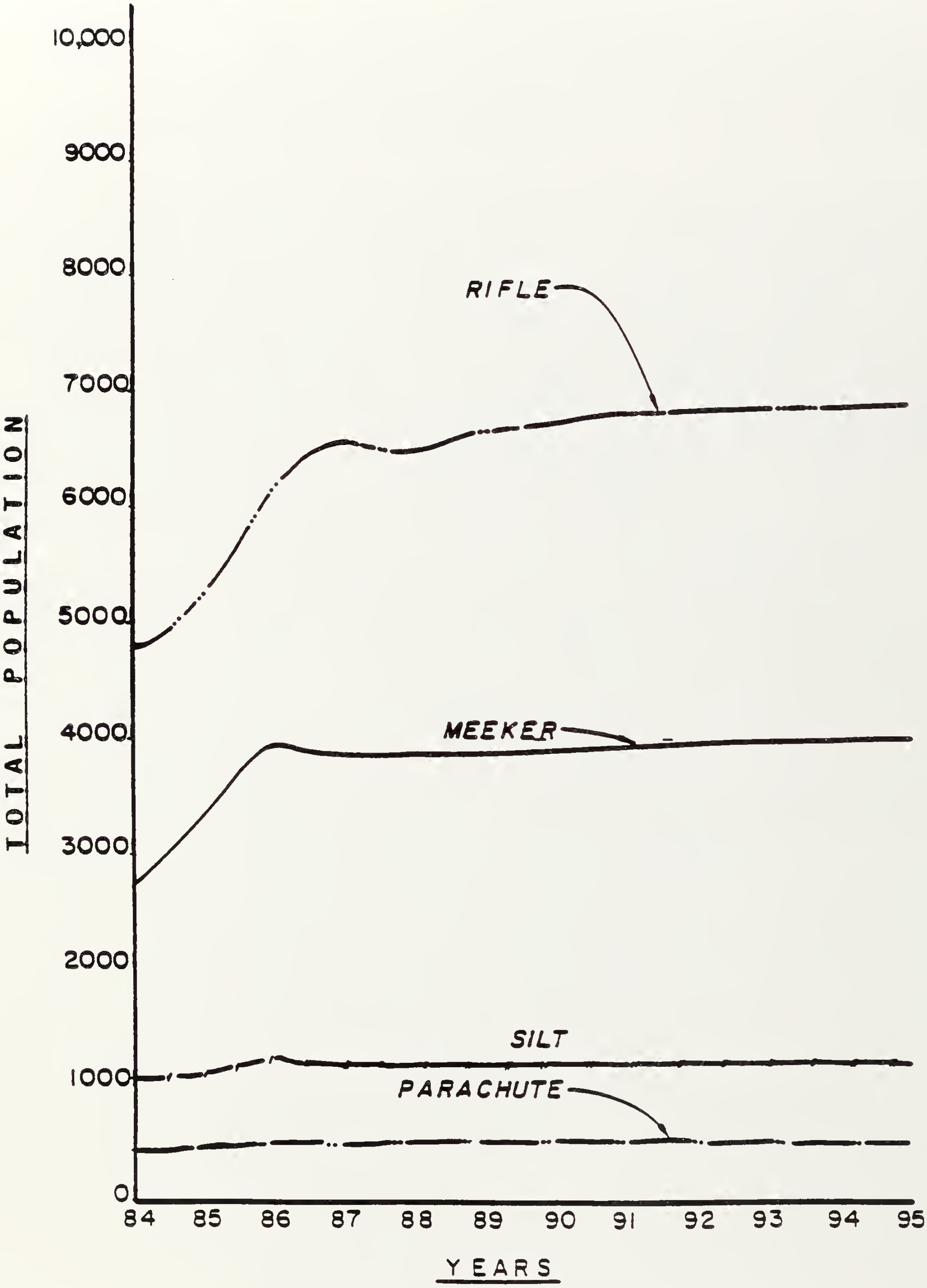


FIGURE 3.2-3

MUNICIPAL CUMULATIVE POPULATION FORECAST



3.2.7 CUMULATIVE SCHOOL-AGE POPULATION FORECAST

With the development of the CB Project, the school population in the Meeker RE-1 School District should increase by 320 students from 1984-1986. The increase in school-age population resulting from Project operations should stabilize at about 270 through the remainder of the forecast period. These figures are presented in Table 3.2-12.

The effect of the CB Project upon the RE-16 District will result in a pronounced peak in school-age population in 1986, during the peak of Project construction activities (see Table 3.2-13). With more housing available in the Rifle area after 1986, the CB impact upon RE-16 will decline rapidly to a stable level of about 110 school-age children. District RE-2 will experience an increase of 420 school-age children as a result of the Project from 1984-1987. Thereafter, RE-2 should experience an increase in school-age population through 1995.

TABLE 3.2-12

TOTAL SCHOOL-AGE POPULATION FOR MEEKER SCHOOL DISTRICT RE-1
(CUMULATIVE CASE)

YEAR	ELEMENTARY (5-10 YEARS)	JR. HIGH (11-14 YEARS)	SR. HIGH (15-18 YEARS)	TOTAL	IMPACT
1984	440	280	230	950	50
1985	510	320	270	1100	180
1986	590	360	310	1260	320
1987	600	350	300	1250	280
1988	600	340	300	1240	270
1989	600	360	320	1280	270
1990	590	360	330	1280	270
1991	580	380	330	1290	270
1992	580	390	330	1300	270
1993	560	390	340	1290	270
1994	540	400	350	1290	270
1995	530	400	360	1290	270
2000	490	370	380	1240	270

Source: Crane & Associates. using the PAS Model

TABLE 3.2-13

SCHOOL-AGE POPULATION FOR GARFIELD COUNTY SCHOOL DISTRICTS
(CUMULATIVE CASE)

	Garfield School District RE-2					Grand Valley School District RE-16				
YEAR	ELEMENTARY (5-10 YEARS)	JR.HIGH (11-14 YRS)	SR. HIGH (15-18 YRS)	TOTAL	IMPACT	ELEMENTARY (5-10 YEARS)	JR. HIGH (11-14 YRS)	SR. HIGH (15-18 YRS)	TOTAL	IMPACT
1984	1000	620	570	2190	60	190	140	140	470	0
1985	1090	660	600	2350	190	210	140	140	490	20
1986	1210	700	670	2580	390	320	220	220	660	370
1987	1250	720	670	2640	420	240	170	160	570	170
1988	1250	720	670	2640	390	250	160	150	560	150
1989	1290	740	690	2720	440	250	160	140	550	140
1990	1320	750	670	2740	440	250	140	130	520	110
1991	1280	780	680	2740	440	240	140	140	520	110
1992	1260	800	680	2740	440	240	140	140	520	110
1993	1230	830	690	2750	440	230	160	130	520	110
1994	1190	850	710	2750	440	220	160	140	520	110
1995	1150	850	730	2730	440	210	160	140	510	110
2000	980	720	800	2500	440	170	140	140	450	110

Source: Crane & Associates, using the PAS Model

3.3 LOCAL ECONOMIC IMPACT ANALYSIS

3.3 LOCAL ECONOMIC IMPACT ANALYSIS

3.3.1 EFFECTS UPON LOCAL EMPLOYMENT

3.3.1.1 RIO BLANCO COUNTY

As indicated in Section 3.2.5, the CB Project will result in a large increase in Rio Blanco County employment during Project construction from 1984-1986. Once Project operations begin, the total increase in employment in Rio Blanco County will stabilize at about 500 new jobs.

The PAS model forecasts employment by major industrial sectors, and these forecasts indicate that the mining, trade, services and government sectors in Rio Blanco County will receive the greatest increase in employment over the long term as a result of the CB Project. Table 3.3-1 is a listing of the differences in employment by sector between the baseline and cumulative cases. A factor influencing the increase in trade and service employment will be the expenditures made by the CB Project locally in those sectors. The effect upon employment in the government sector is expected primarily because of the trend toward increasing public sector employment as a percentage of total employment.

By increasing the opportunity for new employment, the CB Project will have the effect of reducing the number of unemployed persons in Rio Blanco County during the initial stages of Project development. A county unemployment rate of close to five percent is anticipated during Project construction. The unemployment rate in Rio Blanco County will likely change to reflect employment conditions in Colorado and the nation once construction activity is completed.

3.3.1.2 GARFIELD COUNTY

In Garfield County, the mining sector will experience the largest increase in employment, followed by services, trade and government. Table 3.3-2 displays the differences in employment by industrial sector in Garfield

TABLE 3.3-1

EMPLOYMENT INCREASE BY MAJOR INDUSTRIAL SECTOR IN RIO BLANCO COUNTY
(COMPARISON OF CUMULATIVE AND BASELINE CASES)

YEAR	MINING	CONSTRUCTION	MANU-FACTURING	TCPU	TRADE	FIRE	SERVICES	GOVERN-MENT	OTHER	TOTAL
1984	60	70	0	0	30	0	0	10	10	180
1985	120	540	10	20	80	10	30	70	30	910
1986	160	810	10	20	110	20	60	100	40	1330
1987	210	620	10	20	100	20	50	90	40	1160
1988	220	150	10	20	80	20	50	90	30	670
1989	250	20	10	20	70	20	30	70	30	520
1990	260	20	10	20	60	10	40	60	20	500

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

TABLE 3.3-2

EMPLOYMENT INCREASE BY MAJOR INDUSTRIAL SECTOR IN GARFIELD COUNTY
(COMPARISON OF CUMULATIVE AND BASELINE CASES)

YEAR	MINING	CONSTRUCTION	MANU-FACTURING	TCPU	TRADE	FIRE	SERVICES	GOVERN-MENT	OTHER	TOTAL
1984	120	180	0	0	10	0	0	0	0	310
1985	380	420	30	30	170	30	160	110	60	1390
1986	490	1180	50	60	320	60	340	270	130	2900
1987	640	530	50	70	320	70	340	280	140	2440
1988	660	170	40	60	310	70	330	270	140	2050
1989	770	100	30	60	260	50	280	250	120	1920
1990	770	90	30	60	260	50	280	250	120	1910

TCPU - Transportation, Communications and Public Utilities
TRADE - Wholesale and Retail Trade
FIRE - Finance, Insurance and Real Estate
OTHER - Professionals, self-employed and others

Source: Crane & Associates, using the PAS model

County between the cumulative and baseline forecasts. The increases in mining and construction employment will result principally from jobs created by CB. The increase in employment in the trade and services sectors is a response to both expenditures made by the Project locally, and expenditures made by Project employees. The government sector in Garfield County is also projected to expand as a growing percentage of total employment. The unemployment rate in Garfield County should be significantly reduced due to the construction of the Project.

3.3.2 EFFECTS UPON LOCAL INCOME

3.3.2.1 RIO BLANCO COUNTY

Total personal income in Rio Blanco County will increase substantially during the construction of the CB Project. County personal income with the Project, will be larger by almost $14 million annually, once steady state operations are reached. Table 3.3-3 displays the increase in personal income projected to accrue to Rio Blanco County residents as a result of the CB Project. As shown, the total projected increase in Rio Blanco County personal income resulting from the CB Project from 1984-2000 is $251.9 million.

3.3.2.2 GARFIELD COUNTY

Personal income in Garfield County will expand by over $850 million as a result of the CB Project from 1984-2000. Table 3.3-3 lists the annual increase in Garfield County personal income expected to result from the Project.

TABLE 3.3-3

INCREASE IN PERSONAL INCOME FOR RIO BLANCO AND GARFIELD COUNTIES AS A RESULT OF THE CB PROJECT

(Thousands of 1982 $)

YEAR	RIO BLANCO COUNTY PERSONAL INCOME	GARFIELD COUNTY PERSONAL INCOME
1984	$ 4,650	$ 9,840
1985	16,250	38,880
1986	24,900	74,750
1987	22,590	64,470
1988	15,880	52,330
1989	14,200	51,500
1990	13,950	51,240
1991-1995	69,750	257,000
1995-2000	69,750	257,000
TOTAL	$251,920	$857,010

Source: Crane & Associates, using the PAS Model

3.3.3 EFFECTS UPON LOCAL BUSINESS AND TRADE

The downturn in the economies of both Rio Blanco and Garfield Counties, which was caused by a combination of economic recession nationally, and the delay in oil shale project development locally, has resulted in an excess capacity in the local business and commercial sector. This excess capacity is evidenced by vacancies in office and other commercial space, business closures, and a high rate of unemployment. The increase in income which the CB Project will add to the area will utilize this excess capacity, causing the local economy to shift initially toward equilibrium, or a better balance between the demand for goods and services and the supply. It is estimated that the Project will make direct purchases in the communities of Rifle and Meeker of over $10 million annually during the peak of construction activity. These purchases are expected to be primarily in the trade and services sectors of the local economy.

Pressure for over-expansion of the local economy is expected to result from the large amount of new income available locally during the construction phase of the Project. The use of temporary residences, which will discourage construction workers from bringing their families to the Project area, will temper the increased demand for goods and services during this period and decrease the likelihood of over-expansion of local business.

3.4 FISCAL IMPACT ANALYSIS

3.4 FISCAL IMPACT ANALYSIS

In order to determine the fiscal impact of the development of the CB Project upon local government jurisdictions in the Project area, a detailed fiscal analysis of each jurisdiction was conducted. A total of 16 separate jurisdictions were considered in this analysis. These jurisdictions provide local government services to the communities in which CB Project employees are expected to reside.

The analysis was conducted using the Fiscal Systems Model (FSM) developed for the Associated Governments of Northwest Colorado. The model was benchmarked to 1982 revenue and expenditure data for each of the jurisdictions, using the budgets, or where available, the audits of those specific jurisdictions. The model considers growth in population and housing demand as the primary variables in forecasting growth or decline in public revenues and expenditures. Other variables which are computed exogenously, but included in the model calculations, are local government planned capital expenditures and direct Project tax revenues from large industrial projects. The CB Project has developed estimates of Project assessed valuation and use tax base which are included in the Cumulative Case analysis. These estimates were produced in accordance with procedures developed by the Cumulative Impacts Task Force (CITF) specifically for oil shale projects to be located in Northwestern Colorado.

This section provides a forecast of the net fiscal balance for each jurisdiction in the Project area from 1984-2000. The net fiscal balance was derived by producing a complete fiscal forecast for each jurisdiction for both the Cumulative and Baseline growth cases. The net fiscal balance was then computed by subtracting the Baseline forecast from the Cumulative forecast to identify the net fiscal effect of the CB Project. The complete fiscal analysis tables produced by the Fiscal Systems Model for each jurisdiction are included in Volume II.

The Net Fiscal Balance tables incorporate total revenue from all sources, total operations and maintenance expenditures, capital expenditures in the year they are incurred, and outstanding debt service for which the

jurisdiction is obligated. No attempt was made to amortize necessary capital expenditures in the forecasts.

The model bases its calculations on current tax rates in each of the jurisdictions. These rates are held constant over time with the exception of property tax rates which are affected by state imposed maximum tax revenue increases on existing property. Because the model performs all calculations in constant 1982 dollars, most increases in property valuation are a result of anticipated new construction and therefore not considered in setting the annual limit on property taxes collected. An exception is the planned revaluation of the property tax base in 1983 from a 1973 level of value to a 1977 level of value. The revaluation should substantially increase property valuation and lower property tax rates for most jurisdictions, as is reflected in the forecasts.

3.4.1 RIO BLANCO COUNTY JURISDICTIONS

3.4.1.1 RIO BLANCO COUNTY

Rio Blanco County is expected to experience a net fiscal deficit as a result of the CB Project in the initial years of Project development, as shown in Table 3.4-1. This deficit results because of the projected need to expand law enforcement and jail facilities, and a projected net operating deficit in 1986. After 1986, the County will begin to receive significant property tax revenues from the Project, resulting in a large net fiscal surplus to Rio Blanco County for the remainder of the forecast period.

Rio Blanco County is expected to experience declining property tax revenues from conventional oil and gas production in future years. The development of the CB Project will somewhat offset those declining revenues, but the County is expected to have difficulty meeting expenses and maintaining the low tax rates made possible during peak years of oil and gas production.

3.4.1.2 CITY OF MEEKER

Meeker is not expected to incur net deficits as a result of the CB Project as indicated in Table 3.4-2. Anticipated revenues from water tap fees and sales taxes combined with excess capacity in most municipal facilities are the primary reasons that Meeker demonstrates a net fiscal surplus.

Meeker is projected to have a net operating surplus under the Baseline and Cumulative cases. (See Volume II - Fiscal Tables - Rio Blanco County.) Meeker also anticipates major capital expenditures ($1.2 million) for street improvements from 1983-1986, which will likely absorb any operating surplus and eliminate its availability for the financing of other capital expenditures. Thus, the Project induced requirement for capital expenditures on administration and shop facilities must be financed from outside sources.

3.4.1.3 MEEKER RE-1 SCHOOL DISTRICT

The CB Project is expected to require the expansion of elementary school facilities in Meeker prior to the time that additional property tax revenues from the Project are available. As shown in Table 3.4-3, this results in a net fiscal deficit for the District in the initial years of the forecast, 1984-1986. Once the CB Project begins generating property tax revenue, District RE-1 should receive a large net surplus in revenues over and above operating and capital expenditure requirements. The CB Project will more than triple the total assessed valuation of District RE-1.

3.4.1.4 MEEKER SANITATION DISTRICT

The Sanitation District should not require any upgrading to the existing sewage treatment plant in order to accommodate growth resulting from the CB Project. As a result, the District should experience a significant net fiscal surplus as indicated in Table 3.4-4 throughout the forecast period.

The Sanitation District will benefit from increased tap fee revenues as soon as new housing units are required in the Meeker area. This is the

primary reason that the District demonstrates a large net fiscal surplus in the initial years of Project development.

3.4.1.5 MEEKER RURAL FIRE DISTRICT

The Meeker Rural Fire District is expected to experience net operating deficits in 1984 and 1985 prior to the time that property tax revenues from the CB Project are available. Also, the Fire District will require some expansion of its fire station facilities in order to accommodate the Project. The net fiscal balance forecast for the District is shown in Table 3.4-5.

Once the Project is generating property tax revenues, the District is projected to show significant net fiscal surpluses. In actuality, the District would likely reduce its property tax mill levy to reduce these surpluses and reduce the overall tax burden on Fire District taxpayers.

3.4.1.6 MEEKER LIBRARY DISTRICT

The CB Project should affect the Library District in much the same way as the Fire District, with the exception that the Library District should not require capital facility expansion. The Library District is projected to incur a small net fiscal operating deficit from 1984-1986 as a result of the Project. Property tax revenues generated by the Project will provide the District with significant net fiscal surpluses from 1987 forward as shown in Table 3.4-6. The Library District can also be expected to decrease its future tax rate and relieve the overall tax burden on its residents.

3.4.1.7 EASTERN RIO BLANCO COUNTY METROPOLITAN PARKS AND RECREATION DISTRICT

The Parks and Recreation District should require an expansion of park and recreation facilities to accommodate growth resulting from the CB Project. This expansion, coupled with a small net operating deficit, results in a significant net fiscal deficit for the District from 1984-1986. As in the other special purpose districts in Eastern Rio Blanco County, property

taxes paid by the CB Project will result in annual net fiscal surpluses beginning in 1987. Table 3.4-7 presents the net fiscal balance forecast for the Parks and Recreation District.

3.4.1.8 RIO BLANCO COUNTY - SUMMARY

Most local government jurisdictions in Rio Blanco County which will be affected by population growth due to the CB Project will also benefit directly from the increase in property tax base associated with the Project. In most areas these local governments have sufficient excess capacity in public facilities to accommodate growth resulting from the CB Project. Some facility expansion will be required, particularly in the area of schools, maintenance facilities, parks and recreation facilities. Expenditures for this facility expansion will be required before significant property tax revenues are available from the Project, but future tax revenues generated as a result of the Project will more than offset increases in operating and capital expenditures. Figure 3.4-1 is a graphic interpretation of the projected annual change in total revenues and expenditures as a result of the CB Project for all seven local government jurisdictions in Rio Blanco County. The figure indicates that the net increase in total revenues should exceed the net increase in operating costs in each year. Total expenditures are expected to exceed total revenues in 1984 due to the requirement to expand capital facilities. In each succeeding year total revenues are projected to exceed total expenditures by a significant margin.

Since local governments are prohibited from operating with large surpluses or deficits, the actual effect of the CB Project should be a reduction in tax rates for many of the Rio Blanco County jurisdictions.

TABLE 3.4-1

RIO BLANCO COUNTY
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	2153.2	4832.6	6192.8	6170.0	19348.6
Operating Expenditures	2218.9	4005.1	4710.0	4705.4	15639.4
Surplus (Deficit)	(65.7)	827.5	1482.8	1464.6	3709.2
Capital Expenditures					
Jail Facilities	60.3				
Total Surplus (Deficit)	(126.0)	827.5	1482.8	1464.6	3648.9

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-2

CITY OF MEEKER
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	1343.8	1404.7	1660.4	1765.5	6174.4
Operating Costs	738.1	1326.3	1592.7	1715.3	5372.4
Surplus (Deficit)	605.7	78.4	67.7	50.2	802.0
Capital Requirements					
Administration	65.0		5.6		70.6
Shop Facilities	119.7		10.4		130.1
Total Surplus (Deficit)	421.0	78.4	51.7	50.2	601.3

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-3

MEEKER RE-1 SCHOOL DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	2131.6	7463.8	10545.0	10445.7	30586.1
Operating Costs	2074.0	4176.5	5085.6	4829.9	16166.0
Surplus (Deficit)	57.6	3287.3	5459.4	5615.8	14420.1
Capital Requirements					
Elementary School	1048.6				1048.6
Middle School		441.2	28.7	28.7	498.6
Total Surplus (Deficit)	(991.0)	2846.1	5430.7	5587.1	12872.9

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-4

MEEKER SANITATION DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	812.2	482.8	547.6	552.1	2394.7
Operating Expenditures	209.9	378.0	443.2	443.1	1474.2
Surplus (Deficit)	602.3	104.8	104.4	109.0	920.5
Capital Expenditures					
Total Surplus (Deficit)	602.3	104.8	104.4	109.0	920.5

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-5

MEEKER RURAL FIRE DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	27.7	408.4	642.5	640.3	1718.9
Operating Expenditures	35.1	63.0	73.9	74.0	246.0
Surplus (Deficit)	(7.4)	345.4	568.6	566.3	1472.9
Capital Expenditures					
Fire Facilities	18.6		7.3	7.3	33.2
Total Surplus (Deficit)	(26.0)	345.4	561.3	559.0	1439.7

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-6

MEEKER LIBRARY DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	26.5	316.0	492.4	491.1	1326.0
Operating Expenditures	32.0	58.0	67.7	67.9	226.6
Surplus (Deficit)	(5.5)	258.0	424.7	423.2	1100.4
Capital Expenditures					
Total Surplus (Deficit)	(5.5)	258.0	424.7	423.2	1100.4

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-7

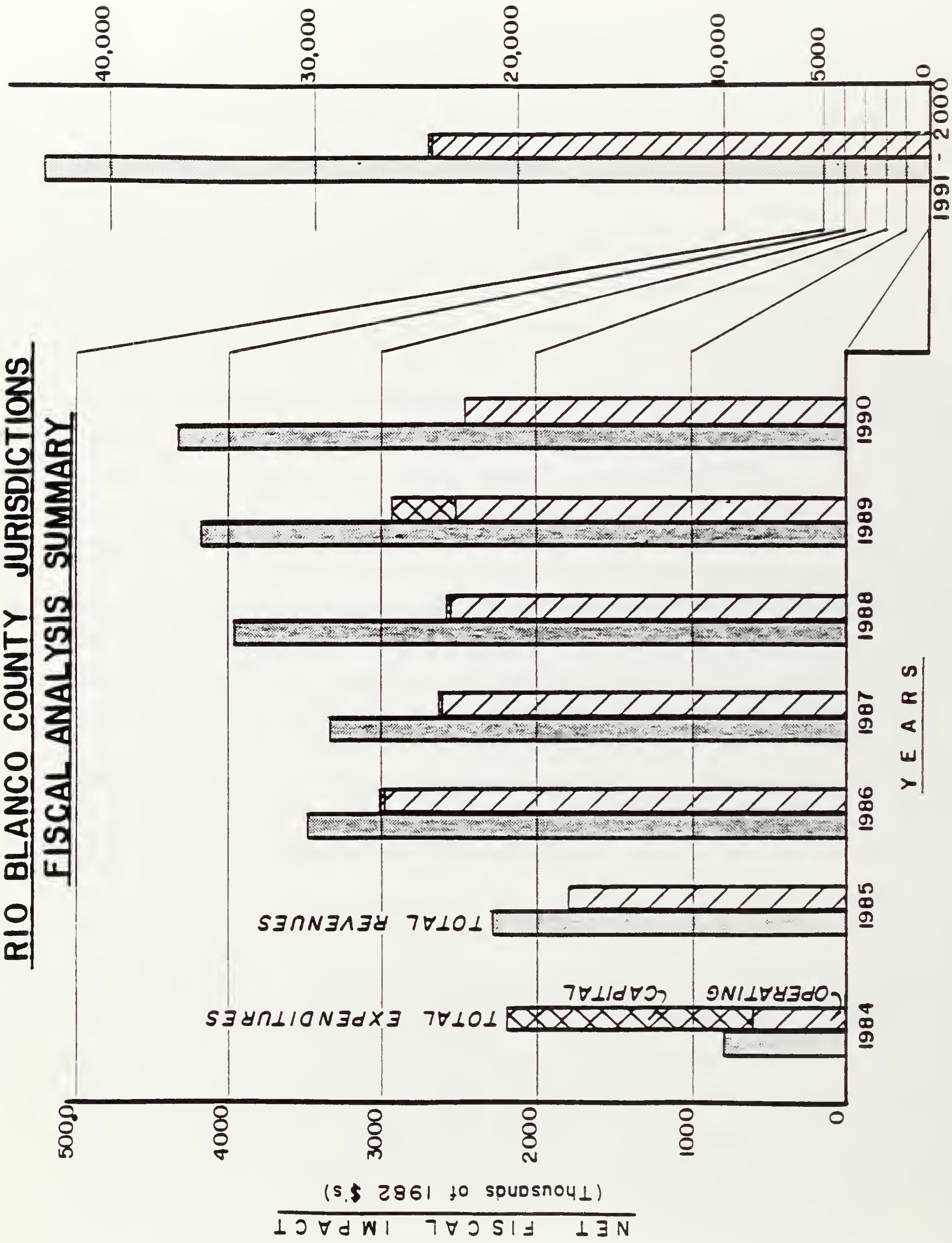
EASTERN RIO BLANCO COUNTY METROPOLITAN PARKS AND RECREATION DISTRICT NET FISCAL BALANCE

(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	92.3	975.7	1512.3	1508.6	4088.9
Operating Expenditures	93.4	168.3	197.4	197.4	656.5
Surplus (Deficit)	(1.1)	807.4	1314.9	1311.2	3432.4
Capital Expenditures:					
Park & Recreation Facilities	303.2				303.2
Total Surplus (Deficit)	(304.3)	807.4	1314.9	1311.2	3129.2

Source: Crane & Associates, using the Fiscal Systems Model

FIGURE 3.4-1



RIO BLANCO COUNTY JURISDICTIONS
FISCAL ANALYSIS SUMMARY
NET FISCAL IMPACT
(Thousands of 1982 $'s)
5000
4000
3000
2000
1000
0
TOTAL EXPENDITURES
CAPITAL
OPERATING
TOTAL REVENUES
1984
1985
1986
1987
1988
1989
1990
YEARS
1991 - 2000
40,000
30,000
20,000
10,000
5000
0

3.4.2 GARFIELD COUNTY JURISDICTIONS

3.4.2.1 GARFIELD COUNTY

In the absence of the CB Project, Garfield County is projected to generate annual fiscal surpluses. (See Volume II - Fiscal Tables - Garfield County).

The CB Project is expected to have a net deficit effect upon Garfield County because it will contribute little in the way of direct taxes to the County. The net fiscal effect of the CB Project upon Garfield County is displayed in Table 3.4-8. The Project is projected to result in net annual operating deficits to the county throughout the forecast period. Additional capital expenditures by the County for public safety and maintenance facilities are projected to be necessary due to the development of CB.

3.4.2.2 CITY OF RIFLE

Rifle will receive increased revenue early on from utility tap fees and sales taxes as a result of Project induced growth. Since most capital facilities in Rifle are capable of accommodating substantial growth, the net increase in expenditures resulting from the CB Project is projected to be less than the net increase in revenue throughout the forecast period. Additional capital facility requirements will be in the areas of maintenance, park and recreation facilities. Table 3.4-9 displays the net fiscal balance forecast for the City of Rifle.

3.4.2.3 TOWN OF SILT

Silt, like Rifle, has capacity in its major physical systems to accommodate substantial population expansion. An initial result of population growth due to the CB Project will be to increase utility tap fee revenues and property and sales tax revenues to the municipality without a substantial increase in operating or capital expenditures. The effect should be a larger net fiscal surplus to the town initially, with net expenditures more closely matching net revenues in later years. Table 3.4-10 presents the net fiscal balance for the Town of Silt.

3.4.2.4 TOWN OF PARACHUTE

Parachute is projected to incur annual operating deficits as a result of the Project as shown in Table 3.4-11. The principal reason that these deficits are projected is due to the operating subsidies which the town has received in recent years from the Colony and Union oil shale projects. For example, in 1982, these subsidies accounted for 32 percent of the town's General Fund revenues. The fiscal projections do not assume these subsidies will be a future source of revenue for the town, but no attempt was made to arbitrarily reduce operating costs by a similar amount, thus the annual deficits.

3.4.2.5 GARFIELD SCHOOL DISTRICT RE-2

School District RE-2, which serves the communities of Rifle, Silt and New Castle, is projected to require the most substantial capital facility expansion due to the Project of all the jurisdictions analyzed. The fiscal effect of the Project upon District RE-2 is presented in Table 3.4-12. The District should incur an annual net operating surplus, but the consideration of capital expenditure requirements for Jr. high and high school facilities results in a projected total net deficit over the forecast period.

3.4.2.6 GRAND VALLEY SCHOOL DISTRICT #16

School District #16, which serves the Parachute/Battlement Mesa area, will require an expansion of its high school facilities to accommodate the projected growth in enrollment due to the CB Project. The cost of developing those facilities should result in a total net fiscal deficit to the District for 1984-1986 as shown in Table 3.4-13. Over the entire forecast period the District is expected to show a net fiscal surplus as a result of the Project.

3.4.2.7 GRAND RIVER HOSPITAL DISTRICT

The additional utilization of Clagett Memorial Hospital resulting from the development of the CB Project should substantially increase revenues to the hospital district without a corresponding increase in costs. As shown in Table 3.4-14, the hospital district is projected to realize a net operating surplus due to growth related to the CB Project. No expansion of existing hospital facilities operated by the district is anticipated.

3.4.2.8 RIFLE RURAL FIRE DISTRICT

The Rifle Rural Fire District is not expected to receive increased revenues to adequately offset its increased cost of supporting Project related population growth. The district is expected to experience annual net operating deficits and capital costs as a result of the Project. The new fiscal balance for the Fire District is displayed in Table 3.4-15.

3.4.2.9 SILT/NEW CASTLE RURAL FIRE DISTRICT

The Silt/New Castle Fire District is projected to incur a small operating deficit as a result of the CB Project from 1984-1986. This net operating deficit is expected to change to a net operating surplus by 1987 and remain as such through the remainder of the forecast period, as shown in Table 3.4-16. The district should not require any capital improvements to support population growth due to the CB Project.

3.4.2.10 FISCAL ANALYSIS SUMMARY - GARFIELD COUNTY JURISDICTIONS

The municipalities of Rifle and Silt, the Grand River Hospital District and the Silt/New Castle Rural Fire District are not expected to experience significant adverse fiscal impact from the development of the CB Project. The two school districts, RE-2 and #16, along with Garfield County, are expected to incur the largest capital expenditure requirements to support the Project. School District RE-2 is projected to require $2.3 million in facility improvements to support CB Project related growth. RE-2 is expected to realize net operating surpluses as a result of the Project,

which could offset a portion of the capital expenditure requirement. School District #16 is also expected to experience net operating surpluses due to the Project, which could offset the cost of expanding the district's high school facilities.

Garfield County is projected to experience the greatest net operating deficits of any jurisdiction as a result of the Project. A primary reason that these net deficits are projected to be as large as they are is due to the substantial fiscal surpluses projected for Garfield County under baseline conditions. The development of the Union Oil Shale Project is expected to add $100 million in assessed valuation to Garfield County's property tax base. Based upon this increase, the County is projected to realize large fiscal surpluses. The projected effect of the CB Project will be to reduce these surpluses.

The Rifle Rural Fire District is expected to require capital expenditures of $35,000 to support the CB Project and to incur a relatively small net operating deficit as a result of the Project.

Figure 3.4-2 graphically displays the net fiscal impact of the CB Project upon all Garfield County jurisdictions throughout the forecast period. Net total expenditure requirements for all jurisdictions are expected to exceed net total revenues in 1984. Initial capital expenditure requirements to support Project development total about $2 million. Total capital expenditure requirements to support the CB Project are projected to be approximately $4 million, calculated in 1982 dollars.

TABLE 3.4-8

GARFIELD COUNTY
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	1133.0	2956.9	3798.7	3806.0	11694.6
Operating Expenditures	1446.1	3299.1	4223.6	4169.0	13137.8
Surplus (Deficit)	(313.1)	(342.2)	(424.9)	(363.0)	(1443.2)
Capital Expenditures					
Public Safety Facilities	156.0				156.0
Maintenance Facilities	182.5				182.5
Total Surplus (Deficit)	(651.6)	(342.2)	(424.9)	(363.0)	(1781.7)

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-9

CITY OF RIFLE
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	2237.9	4839.4	6954.4	7029.4	21061.1
Operating Expenditures	1204.8	4106.5	6784.0	6802.7	18898.0
Surplus (Deficit)	1033.1	732.9	170.4	226.7	2163.1
Capital Expenditures					
Maintenance Facilities	132.8	65.4	5.5		203.7
Parks & Recreation Facilities	347.4	170.9	14.3		532.6
Total Surplus (Deficit)	552.9	496.6	150.6	226.7	1426.8

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-10

TOWN OF SILT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	208.9	312.4	319.8	289.6	1130.7
Operating Expenditures	109.2	226.1	286.8	282.5	904.6
Surplus (Deficit)	99.7	86.3	33.0	7.1	226.1
Capital Expenditures					
Maintenance Facilities	10.4				10.4
Park & Recreation Facilities	12.0				12.0
Total Surplus (Deficit)	77.3	86.3	33.0	7.1	203.7

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-11

TOWN OF PARACHUTE
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	67.5	157.1	190.7	178.4	593.7
Operating Expenditures	82.1	182.5	222.8	202.5	689.9
Surplus (Deficit)	(14.6)	(25.4)	(32.1)	(24.1)	(96.2)
Capital Expenditures					
Total Surplus-(Deficit)	(14.6)	(25.4)	(32.1)	(24.1)	(96.2)

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-12

GARFIELD SCHOOL DISTRICT RE-2
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	767.2	3353.6	4720.5	4832.5	13673.8
Operating Expenditures	688.9	2904.7	4082.1	4174.7	11850.4
Surplus (Deficit)	78.3	448.9	638.4	657.8	1823.4
Capital Expenditures					
Jr. High Facilities	1315.0	623.5			1938.5
High School Facilities			285.7	97.0	382.7
Total Surplus (Deficit)	(1236.7)	(174.6)	352.7	560.8	(497.8)

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-13

GRAND VALLEY SCHOOL DISTRICT #16
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	1521.5	4619.7	5448.0	5418.0	17007.2
Operating Expenditures	1403.9	2489.1	2715.0	2606.0	9214.0
Surplus (Deficit)	117.6	2130.6	2733.0	2812.0	7793.2
Capital Expenditures					
High School Facilities	516.4				516.4
Total Surplus (Deficit)	(398.8)	2130.6	2733.0	2812.0	7276.8

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-14

GRAND RIVER HOSPITAL DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	989.9	2308.9	2970.7	2947.5	9217.0
Operating Expenditures	756.1	1756.1	2243.7	2235.5	6991.4
Surplus (Deficit)	233.8	552.8	727.0	712.0	2225.6
Capital Expenditures					
Total Surplus (Deficit)	233.8	552.8	727.0	712.0	2225.6

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-15

RIFLE RURAL FIRE DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	11.0	50.8	70.0	70.5	202.3
Operating Expenditures	21.6	68.4	91.3	91.6	272.9
Surplus (Deficit)	(10.6)	(17.6)	(21.3)	(21.1)	(70.6)
Capital Expenditures					
Fire Facilities		30.0	3.5	1.5	35.0
Total Surplus (Deficit)	(10.6)	(47.6)	(24.8)	(22.6)	(105.6)

Source: Crane & Associates, using the Fiscal Systems Model

TABLE 3.4-16

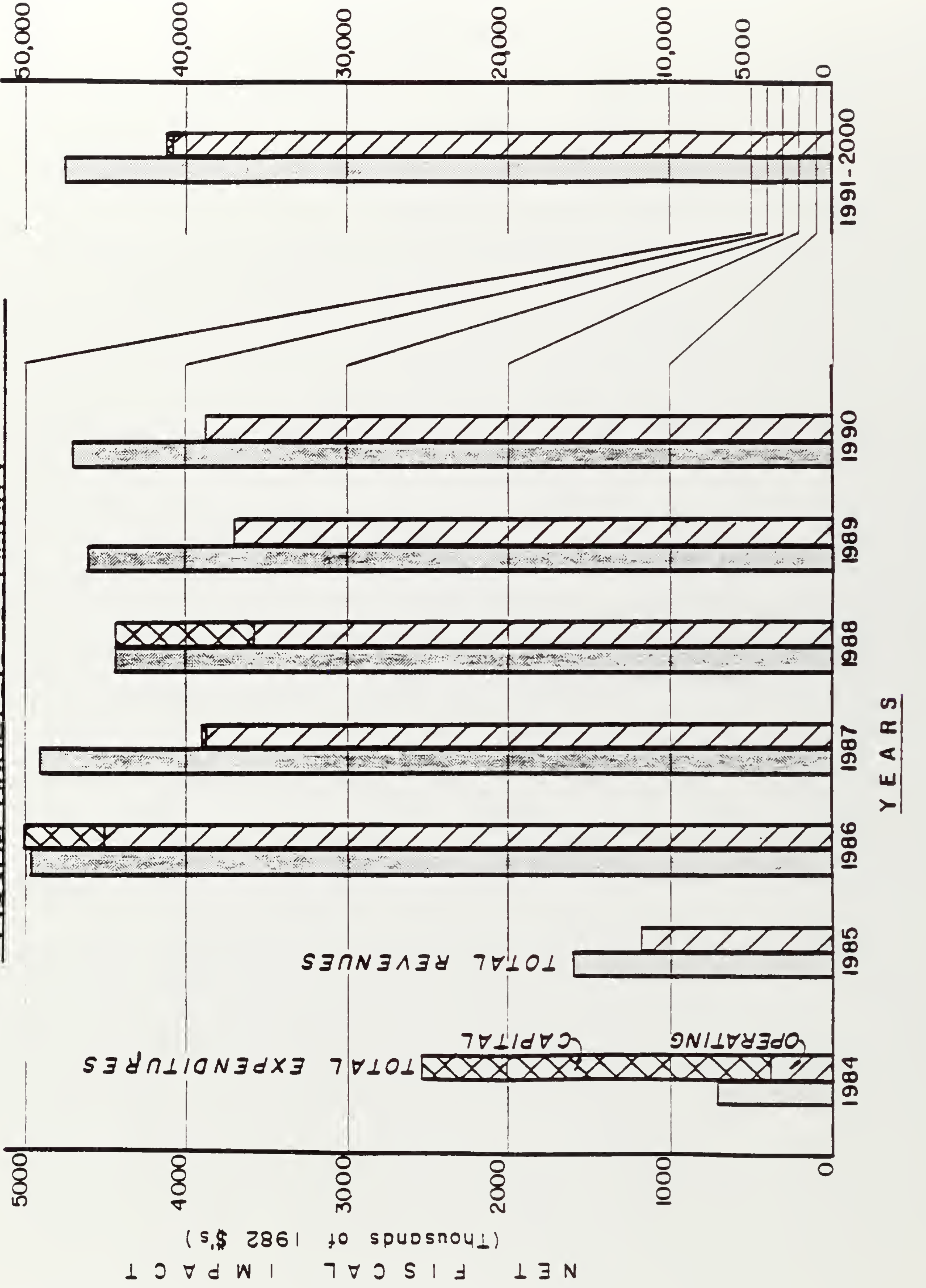
SILT/NEW CASTLE RURAL FIRE DISTRICT
NET FISCAL BALANCE
(Thousands 1982 $)

	1984-1986	1987-1990	1991-1995	1996-2000	TOTAL
Total Revenue	.9	9.8	15.0	15.0	40.7
Operating Expenditures	1.9	5.0	9.5	9.1	25.5
Surplus (Deficit)	(1.0)	4.8	5.5	5.9	15.2
Capital Expenditures					
Total Surplus (Deficit)	(1.0)	4.8	5.5	5.9	15.2

Source: Crane & Associates, using the Fiscal Systems Model

FIGURE 3.4-2

GARFIELD COUNTY JURISDICTIONS
FISCAL ANALYSIS SUMMARY



3.5 HOUSING IMPACT ANALYSIS

3.5 HOUSING IMPACT ANALYSIS

3.5.1 HOUSING DEMAND

Table 3.5-1 depicts the total projected housing demand associated with in-migrating CB Project employees and in-migrating induced employees.

TABLE 3.5-1

CATHEDRAL BLUFFS PROJECT-RELATED HOUSING DEMAND*
TOTAL HOUSING UNITS

	Direct Construction	Direct Operations	Induced	Total New Demand
1984	156	131	67	354
1985	664	387	267	1,318
1986	1,543	509	586	2,638
1987	783	642	750	2,175
1988	179	659	825	1,663
1989	0	779	762	1,543

* The numbers represent annual averages.

Source: Cathedral Bluffs (PAS Model)

Data depicted in Table 3.5-1 indicates the peak construction employee housing demand will occur in 1986 and rapidly decline to zero by the end of 1988. The operations employee housing demand gradually increases to a steady-state level of about 820 units. Housing demand created by induced population growth is expected to peak at about 825 units in 1988, and remain at approximately 760 units under steady-state operations.

TABLE 3.5-2

PROJECT-RELATED HOUSING DEMAND BY COMMUNITY

	Rio Blanco County			Garfield County				
Year	Mancamp	Meeker	Other	Rifle	Silt	P/BM*	Other	Total
DIRECT CONSTRUCTION WORKFORCE								
1984	0	34	1	97	6	12	6	156
1985	450	39	1	130	9	26	9	664
1986	576	159	7	200	40	520	41	1,543
1987	509	49	2	195	11	6	11	783
1988	101	17	0	53	3	2	3	179
1989	0	0	0	0	0	0	0	0
DIRECT OPERATIONS WORKFORCE								
1984	--	26	1	91	5	3	5	131
1985	--	106	4	242	14	7	14	387
1986	--	141	6	317	18	9	18	509
1987	--	191	8	388	22	11	22	642
1988	--	195	8	399	23	11	23	659
1989	--	222	9	480	27	14	27	779
INDUCED WORKFORCE								
1984	--	26	1	34	2	2	2	67
1985	--	180	7	70	4	2	4	267
1986	--	252	10	146	16	146	16	586
1987	--	216	8	237	26	237	26	750
1988	--	233	9	321	29	204	29	825
1989	--	213	9	364	28	120	28	762
PROJECT-RELATED NEW HOUSING DEMAND								
1984	0	86	3	222	13	17	13	354
1985	450	325	12	442	27	35	27	1,318
1986	576	552	23	663	74	675	75	2,638
1987	509	456	18	820	59	254	59	2,175
1988	101	445	17	773	55	217	55	1,663
1989	0	435	18	844	55	134	55	1,541

* P/BM - Parachute/Battlement Mesa.

SOURCES: Cathedral Bluffs (PAS Model)

3.5.2 HOUSING DISTRIBUTION

The existing housing vacancies, commuting time, and previous experience were utilized to allocate housing demand in the two-county Study Area. The majority of the units were allocated to the four communities: Meeker, Rifle, Silt, and Parachute/Battlement Mesa. In addition, temporary construction workers were assigned to the mancamp planned for the Project site. The mancamp is designed to accommodate in-migrating single-status construction workers. The remaining small number of units were allocated to an "Other" category in Rio Blanco County and Garfield County. In Rio Blanco County, this category includes Rangely and the unincorporated County area. In Garfield County, the "Other" category represents New Castle, Glenwood Springs, Carbondale, and the unincorporated County area.

Table 3.5-2 depicts the distribution of housing demand associated with the CB Project. The construction workforce peak housing demand is projected to occur in 1986, at 1,543 units. Over 48 percent of this demand is projected to occur in Rio Blanco County, with the remaining 52 percent in Garfield County. The mancamp, planned for the Project site, is projected to accommodate 37 percent of the peak construction housing demand. The four communities projected to house the greater number of in-migrating construction employees are: Parachute/Battlement Mesa, 33 percent; Rifle, 13 percent; Meeker, 10 percent, and Silt, 2.5 percent. The remaining 4.5 percent of construction employees are projected to be housed in the "Other" communities.

Approximately 29 percent of the in-migrating operations workforce housing demand is projected to be accommodated in Rio Blanco County, primarily Meeker. Over 63 percent of the operations demand is projected to take place in Rifle. Silt, Parachute/Battlement Mesa, and the "Other" communities will accommodate the remaining eight percent of the housing required for in- migrating operations employees.

The Project-related new housing demand reaches its peak annual level of 2,638 units in 1986. Over 43 percent of these units are assumed to be in Rio Blanco County, with the remaining 57 percent in Garfield County. The vast majority of the Project-related housing demand is expected to be provided by the communities of Meeker, Rifle, Parachute/ Battlement Mesa; and the on-site housing facility.

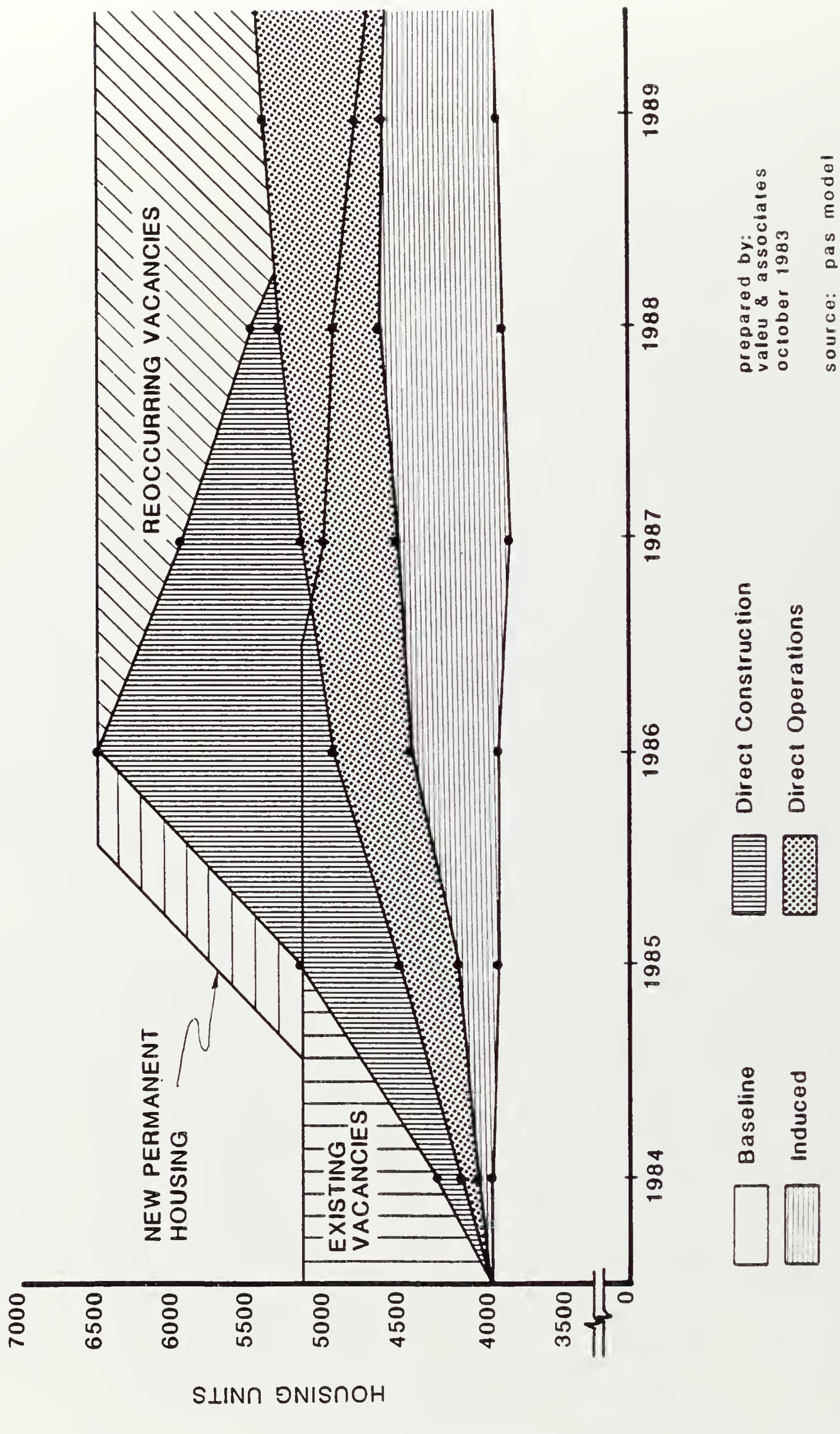
3.5.3 SUMMARY

Figure 3.5-1 depicts the projected cumulative demand for housing within the Study Area.

As the figure indicates, there are two distinct characteristics associated with the demand for housing. One is the temporary nature of the housing demand associated with the direct construction workforce. This requirement exists for approximately 5 years. On the other hand, the housing demand associated with the induced workforce and direct operations is primarily a permanent housing demand. The CB Project housing mitigation plan is predicated upon minimizing the potential for over building the permanent housing stock to meet the total demand. To do so would cause another high vacancy situation once the construction phase of the Project was complete.

FIGURE 3.5-1

CATHEDRAL BLUFFS PROJECT
TOTAL HOUSING DEMAND/SUPPLY



prepared by:
valeu & associates
october 1983

source: pas model

note: housing demand figures represent annual averages

3.6 TRANSPORTATION IMPACT ANALYSIS

3.6 TRANSPORTATION IMPACT ANALYSIS

3.6.1 EXISTING TRANSPORTATION NETWORK

The principal access to the C-b Tract is by the Piceance Creek Road from either Colorado Highway 13 or Colorado Highway 64. All of the routes are paved, two-lane highways, maintained by the State of Colorado, or in the case of the Piceance Creek Road, by Rio Blanco County.

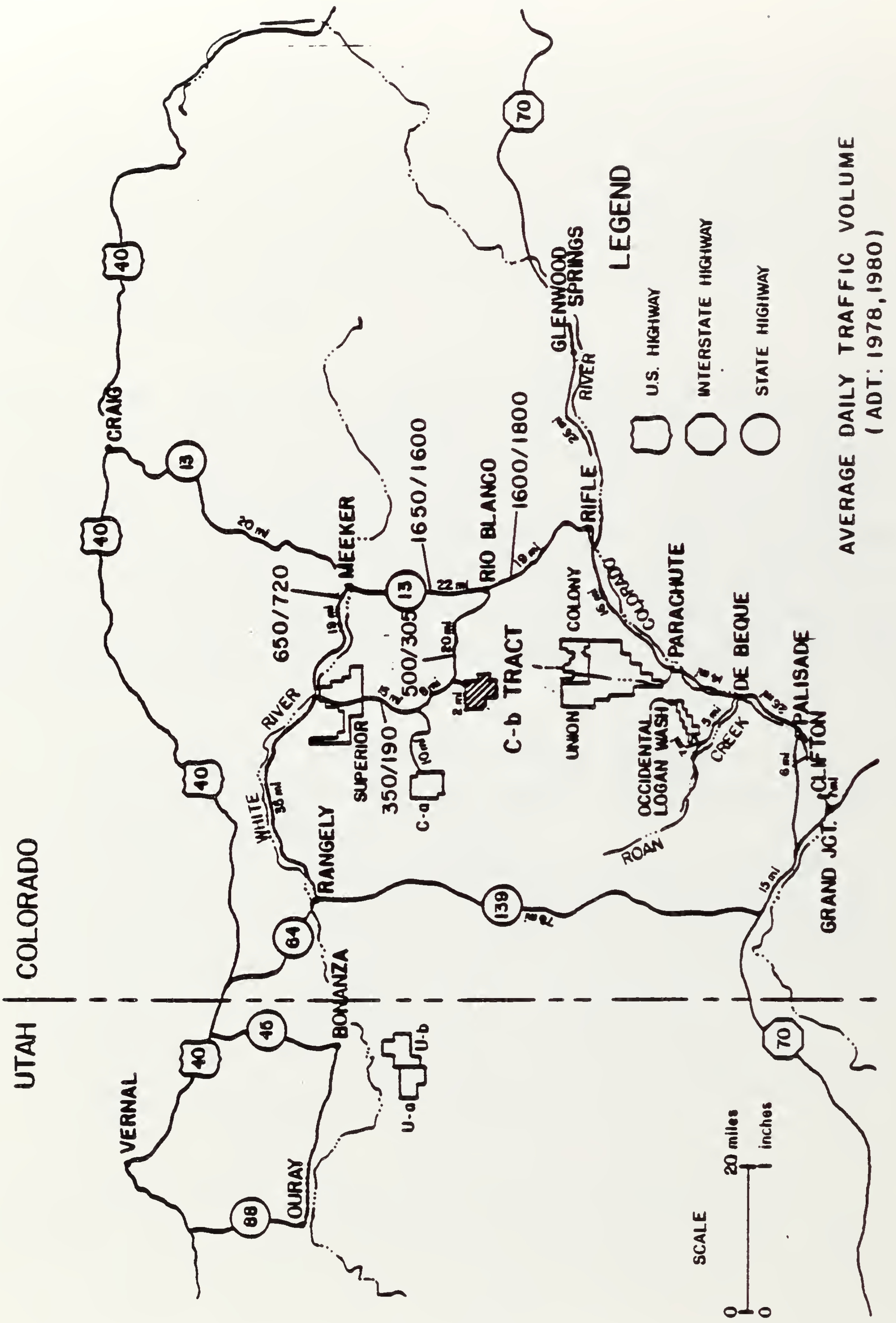
Figure 3.6-1 indicates the Average Daily Traffic (ADT) volume along these roadways in 1978 and in 1980. The ADT is the average two-way travel along the highway over a 24-hour period.

The Colorado Highway Department has established general highway design criteria for two-laned highways, at vehicle operating speeds of 52-57 M.P.H., which indicates a capacity of 900 vehicles per hour (VPH) (Colorado Highway Department Design Manual, January, 1972). In order to apply this figure to Highways 13 and 64 and the Piceance Creek Road, the Highway Department suggests an adjustment for rolling terrain and percentage of large trucks using the roadway. Using a suggested factor of 0.5, these roadways have approximate design capacity of 450 VPH. Given the Highway Department conversion factor of 0.14 (ADT) = VPH, an approximate equivalent capacity in average daily traffic for these highways is 3,215.

Each of the State Highway segments in the area have been designed to a standard load bearing structure of 18,000 pounds per vehicle axle. The Piceance Creek Road is designed to a higher standard of 22,000 pounds per vehicle axle.

Railroad access is provided to the area by the D.&R.G.W. Railroad, which links Denver and Salt Lake City, through Rifle. Cathedral Bluffs owns 40 acres of property along the D.&R.G.W. tracks west of Rifle. Plans call for the construction of a railroad loadout facility on that property.

FIGURE 3.6-1


UTAH
COLORADO
VERNAL
40
88
OURAY
45
BONANZA
U-a
U-b
64
RANGELY
139
WHITE
RIVER
38 mi
40
CRAIG
13
20 mi
MEEKER
650/720
19 mi
13
1650/1600
22 mi
RIO BLANCO
1600/1800
19 mi
500/305
20 mi
350/190
SUPERIOR
10 mi
C-a
2 mi
C-b TRACT
UNION
COLONY
16 mi
COLORADO
PARACHUTE
DE BEQUE
OCCIDENTAL
LOGAN WASH
ROAN
CREEK
PALISADE
CLIFTON
6 mi
GRAND JCT.
15 mi
RIFLE
25 mi
RIVER
GLENWOOD
SPRINGS
70
70
LEGEND
U.S. HIGHWAY
INTERSTATE HIGHWAY
STATE HIGHWAY
AVERAGE DAILY TRAFFIC VOLUME
(ADT: 1978, 1980)
SCALE
0
20 miles
0
1
inches

3.6.2 EFFECTS ON TRANSPORTATION FACILITIES

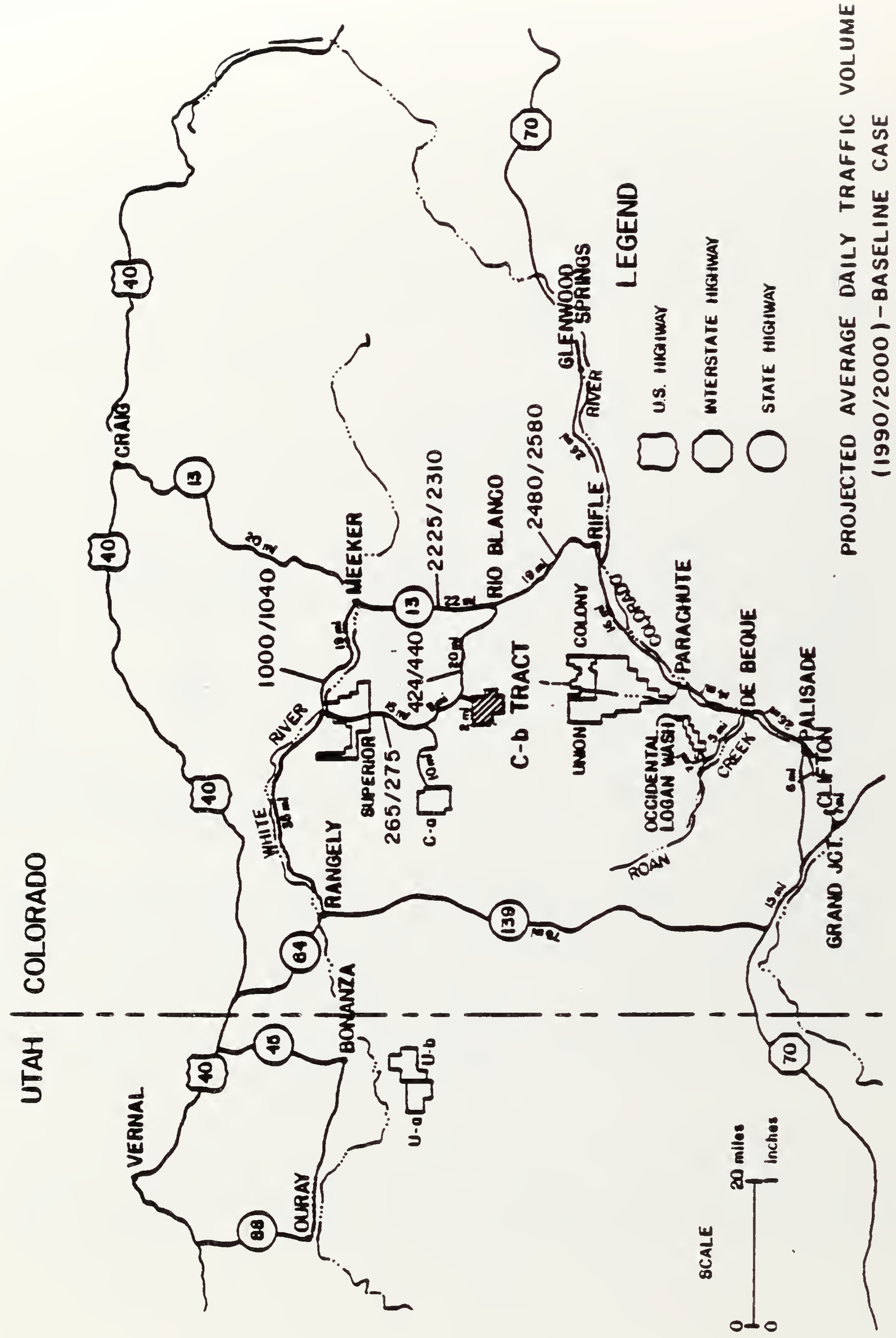
The growth in demand upon the regional transportation system is not easily estimated. There is a general correlation between transportation usage and population, so the projected growth rate in Rio Blanco County population was applied to the traffic volumes along local highways to estimate 1990 and 2000 levels of traffic volume. These figures are displayed in Figure 3.6-2. Projections indicate that growth in traffic volume should not exceed roadway design capacity on any of the road segments in the Project area through the year 2000.

Demands placed upon the local transportation system by the CB Project would be derived from two basic transportation requirements: the transportation of materials to the site and product from the site, and the transportation of employees to and from the site. Table 3.6-1 is an annual estimate of vehicle trips per day needed to transport materials, product and employees to and from the CB site. This estimate assumes that a large proportion of employees will utilize company-provided bus service to and from the site. The specific assumptions made regarding employee bus transportation during the construction period are as follows:

- 75% of operations employees will be bussed to the site.
- 25% of operations employees will commute in private vehicles, at an average of two employees per vehicle.
- From 1985-1987, an average 500-600 of the total construction employees will be housed on-site. These employees are expected to make two round trips per week to either Rifle or Meeker, once as part of a weekly commute and once for other reasons. 90% of these trips will be made by bus and 10% by private vehicles.
- Of those construction employees not residing on-site, 90% will commute by bus, and 10% will commute by private vehicle, at an average of two employees per vehicle.

It is further assumed, based upon the expected residency pattern of employees, and the origin of materials and destination of product, that 85% of the Project generated traffic will travel from Rifle, North on Colorado 13 and Northwest on the Piceance Creek Road to the site. The remaining 15%

FIGURE 3.6-2



PROJECTED AVERAGE DAILY TRAFFIC VOLUME (1990/2000)-BASELINE CASE

of the Project generated traffic will travel south from Meeker via Colorado 13 and West on the Piceance Creek Road to the site.

As is shown in Table 3.6-1, the peak in traffic volume generated by the CB Project will occur in 1986 at about 126 trips per day higher than the projected steady-state traffic volume. The direct CB Project generated traffic volume combined with the Project induced and baseline growth in traffic volume will not exceed the designated design capacity of 3,215 vehicles per day on any of the highway segments in the Project area through 2000, as shown in Figure 3.6-3.

TABLE 3.6-1

ESTIMATED AVERAGE DAILY TRAFFIC GENERATED BY THE CB PROJECT

Year	Vehicle Trips Construction Employees	(ADT) Operations Employees	Material & Product Truck Traffic (ADT)	Total
1984	40	50	32	122
1985	90	150	52	292
1986	220	190	46	456
1987	106	250	40	396
1988	24	300	30	354
1989-2000 (Steady State	0	300	30	330

Source: CB Project Estimate

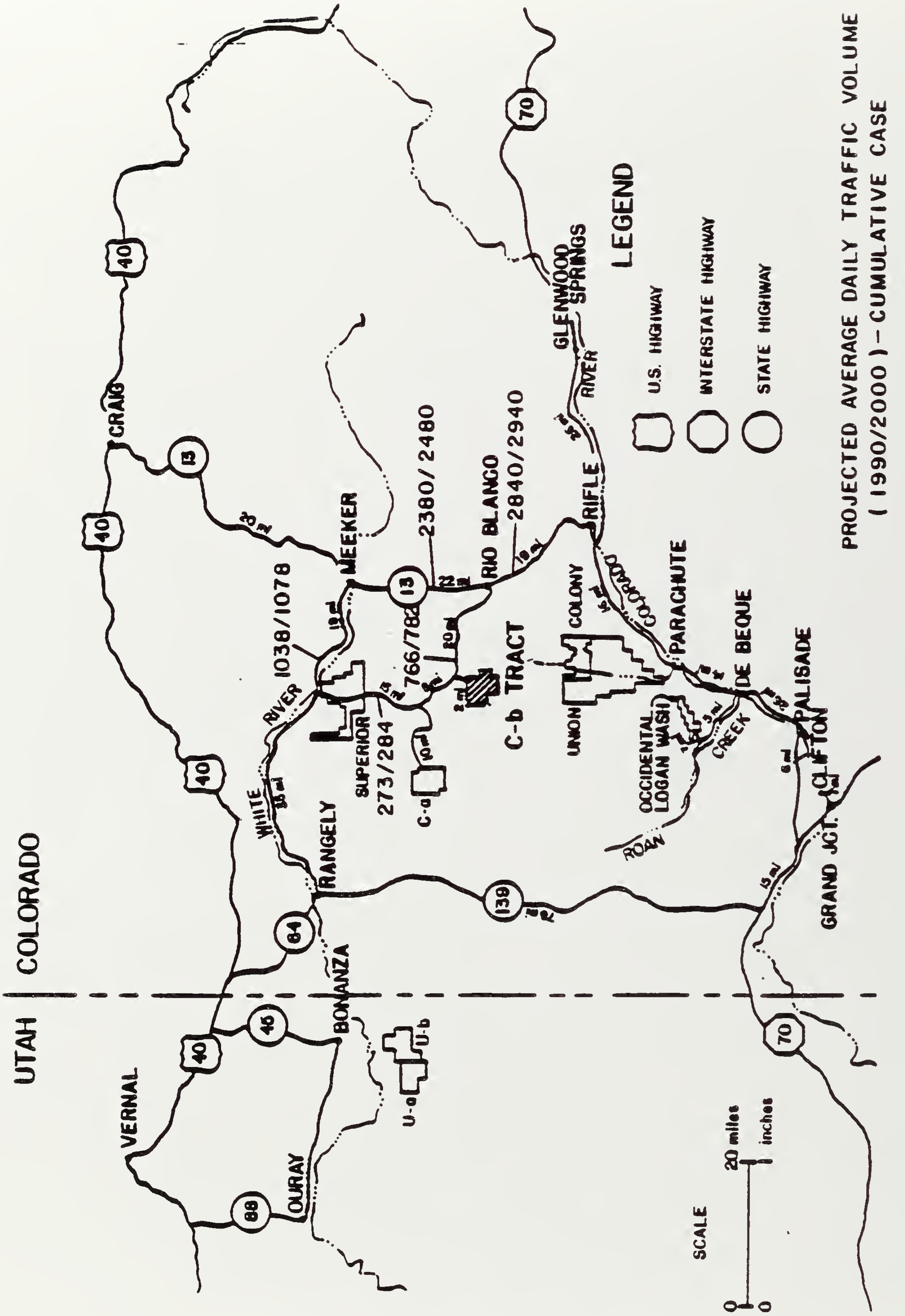
The road segment which will most closely approach capacity is Colorado 13 from Rifle to Rio Blanco. In 1986, the year of peak Project generated traffic volume, that road segment is expected to carry about 3,000 ADT. By 1990, that volume is expected to decrease to 2,840 ADT. The projected average daily traffic for each road segment in the Project area under the cumulative scenario is displayed in Figure 3.6-3.

Analysis of environmental effects of increased numbers of vehicles, primarily concentrate on deer/vehicle collisions. The CB Project operates traffic counters at both ends of Piceance Creek Road and at the turn-off to

the C-b Tract. After many years of monitoring deer road kills, CB found deer herd size, winter weather, and numbers of vehicles (in descending order of importance) as parameters which influence the number of deer road kills. The CB Project, in conjunction with the Colorado Division of Wildlife, Oil Shale Office and the Department of Energy, is testing a reflector which may reduce deer road kills. Also, CB has initiated habitat improvement projects to mitigate impacts. CB will continue to mitigate traffic impacts based on the regional habitat management plan in cooperation with the Division of Wildlife, BLM and the Oil Shale Office.

Other transportation systems which will be affected by the development of the CB Project include: the D.&R.G.W. railroad line into Rifle, Interstate 70 through Rifle, and air service into Rifle and Grand Junction. The total increase in usage of these facilities generated by the CB Project, in comparison with their capacity, is expected to be insignificant. The CB Project will develop a railroad siding west of Rifle to accommodate rail shipments.

FIGURE 3.6-3



PROJECTED AVERAGE DAILY TRAFFIC VOLUME (1990/2000)-CUMULATIVE CASE

3.7 PROJECT SUSPENSION IMPACT ANALYSIS

3.7 PROJECT SUSPENSION IMPACT ANALYSIS

At the request of Rio Blanco County, a special analysis has been prepared which considers the socioeconomic effects from suspension of Project development. The Project (like any other) is continuously subject to suspension resulting from a variety of adverse developments. Two of the more identifiable near-term junctures for a conscious decision to suspend are: inability to complete all financing arrangements with the Synthetic Fuels Corporation or, after completing such documents, receiving an estimate for the Project that is too high for CB or the SFC to support. The latter decision point could come in the third quarter of 1984. Even though CB does expect a satisfactory estimate and to elect to construct, a date substantialy after significant construction was chosen as the basis for this analysis in order to address local government concerns. A suspension of Project development activities in mid-1986, during the projected peak of construction activity was chosen as this worst case scenario.

The assumptions which form the basis of this analysis should not be construed as anything more than hypothetical and prepared for the sole purpose of examining the effects of a "what if" case.

The specific assumptions upon which this hypothetical analysis was structured include the following:

1. All construction activity on the Project would be suspended in mid-1986, without any resumption in construction during the forecast period.

2. All Project operating personnel would leave the site by the end of 1986 with the exception of a small caretaking group.

3. Development of the Project would follow the actual schedule until mid-1986.

3.7.1 EMPLOYMENT AND POPULATION EFFECTS

A mid-1986 suspension of Project development would result in a lower peak level of employment and population in Rio Blanco County. Table 3.7-1 reflects the total level of employment projected for Rio Blanco County from 1986-1990, assuming Project suspension. Under this scenario, employment in 1985 would match the Cumulative Case forecast, while employment in 1991 and beyond would match the Baseline Case forecast. Assuming suspension, total county employment in 1986 would be 190 less than under the Cumulative Case. Total employment in Rio Blanco County would decline by 890 from 1986-1990.

The anticipated employment effects of the suspension scenario upon Garfield County are displayed in Table 3.7-1. Total county employment in 1986 is expected to drop from the level attained in 1985. Total employment should continue to decrease through 1989. The peak in new employment in Garfield County resulting from the Project should be one-half of what it is projected to be under the Cumulative Case. (1450 versus 2900 in 1986)

Table 3.7-2 displays the population effects of the suspension scenario in Rio Blanco County. Total peak population in the county in 1986 should rise to only 8950 versus the peak of 10,050 predicted under the Cumulative Case. A population decline of 450 persons in 1987 is projected under this case, versus the increase in county population projected for that year under both the Baseline and Cumulative Cases. Total population in Meeker in 1986 would be 590 less than the Cumulative Case population for that year. Meeker would experience a period of declining population from 1987-1990.

Garfield County peak population in 1986 is expected to be almost 2000 persons less than the total projected under the Cumulative Case. Table 3.7-3 presents the population effects upon Garfield County jurisdictions of the suspension scenario. The suspension of the CB Project should reverse the projected annual growth in population in Rifle, Silt and Parachute from 1986-1989, resulting in annual population decline in those communities.

Figures 3.7-1 and 3.7-2 graphically display county and municipal population forecasts, assuming the Project suspension case. In most jurisdictions the

effect of the short Project construction period causes a pronounced "hump" in an otherwise relatively flat population curve.

School-age populations in the three school districts affected by the Project should reach a peak in 1986 and then decline over the following three years under the suspension scenario. Table 3.7-4 presents total school-age population projections for each school district and identifies the increment of that population attributable to the CB Project for the suspension scenario.

TABLE 3.7-1
EMPLOYMENT EFFECTS - PROJECT SUSPENSION CASE

	RIO BLANCO COUNTY		GARFIELD COUNTY	
Year	Total Employment	Project Impact	Total Employment	Project Impact
1986	5,000	650	14,230	1,450
1987	4,050	120	13,330	530
1988	4,000	20	13,040	120
1989	4,040	5	13,010	40
1990	4,110	0	13,190	0

Source: Crane & Associates, using the PAS Model

TABLE 3.7-2
POPULATION EFFECTS - PROJECT SUSPENSION CASE
RIO BLANCO COUNTY JURISDICTIONS

	RIO BLANCO COUNTY		MEEKER	
Year	Total Population	Project Impact	Total Population	Project Impact
1986	8,950	1,110	3,370	790
1987	8,500	140	2,840	130
1988	8,530	60	2,810	60
1989	8,620	20	2,820	20
1990	8,800	0	2,860	0

Source: Crane & Associates, using the PAS Model

TABLE 3.7-3

POPULATION EFFECTS - PROJECT SUSPENSION CASE

GARFIELD COUNTY JURISDICTIONS

	GARFIELD COUNTY		RIFLE		SILT		PARACHUTE	
Year	Total Population	Project Impact	Total Population	Project Impact	Total Population	Project Impact	Total Population	Project Impact
1986	29,780	1,730	5,780	1,280	1,110	80	450	30
1987	29,200	1,080	5,360	860	1,080	50	440	20
1988	28,460	140	4,650	120	1,050	10	430	0
1989	28,550	50	4,590	40	1,040	0	430	0
1990	28,660	0	4,580	0	1,050	0	440	0

Source: Crane & Associates, using the PAS Model

TABLE 3.7-4

SCHOOL-AGE POPULATION EFFECTS - SUSPENSION CASE

Year	MEEKER RE-1 SCHOOL DIST.		GARFIELD COUNTY RE-2 SCHOOL DIST.		GRAND VALLEY RE-16 SCHOOL DIST.	
	Total School-Age Population	Project Impact	Total School-Age Population	Project Impact	Total School-Age Population	Project Impact
1986	1,150	210	2,580	390	500	110
1987	1,080	110	2,490	270	430	30
1988	1,060	70	2,290	40	410	0
1989	1,010	0	2,280	0	410	0
1990	1,010	0	2,300	0	410	0

Source: Crane & Associates, using the PAS Model

FIGURE 3.7-1

COUNTY POPULATION FORECAST

PROJECT SUSPENSION CASE

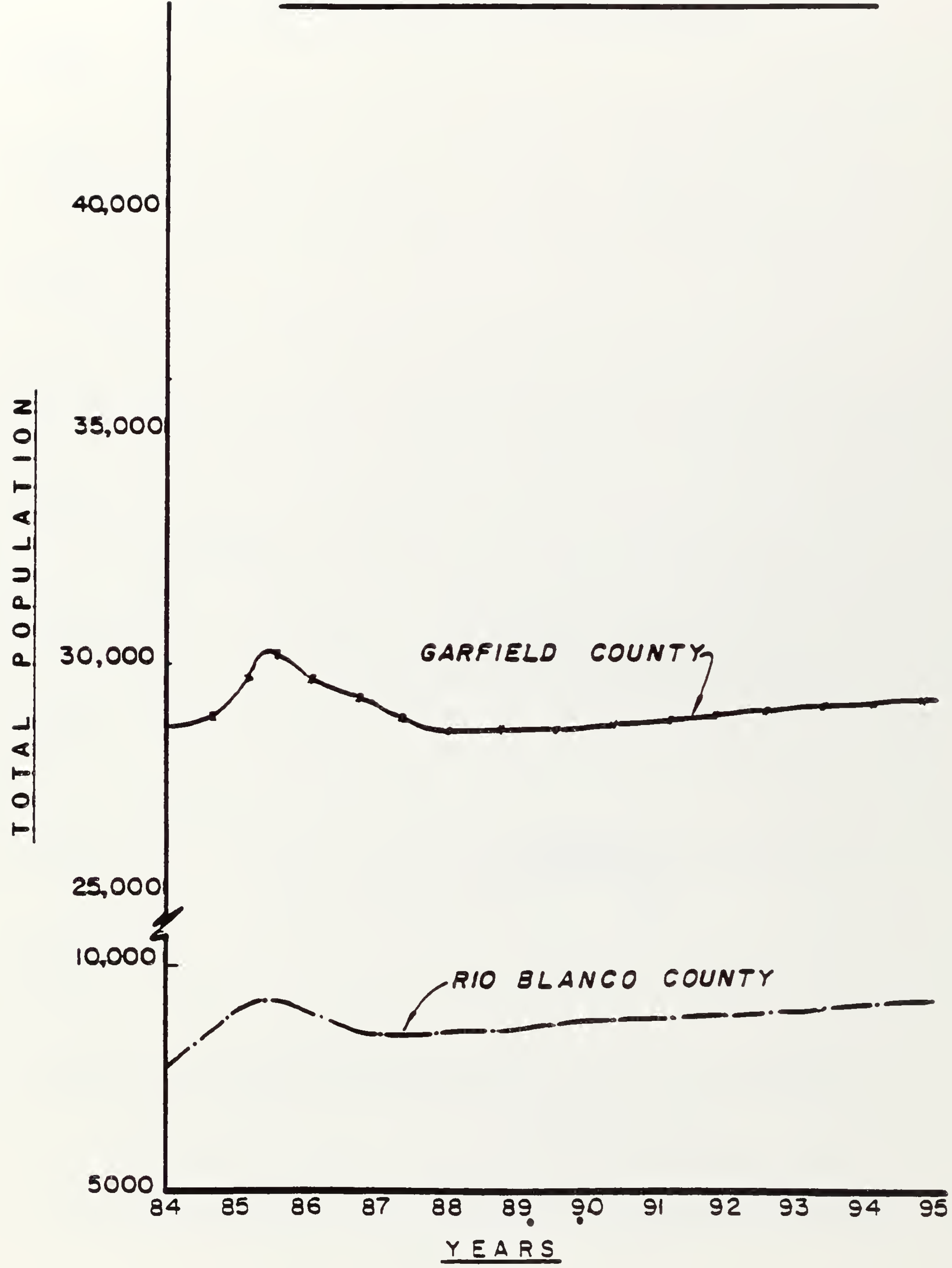
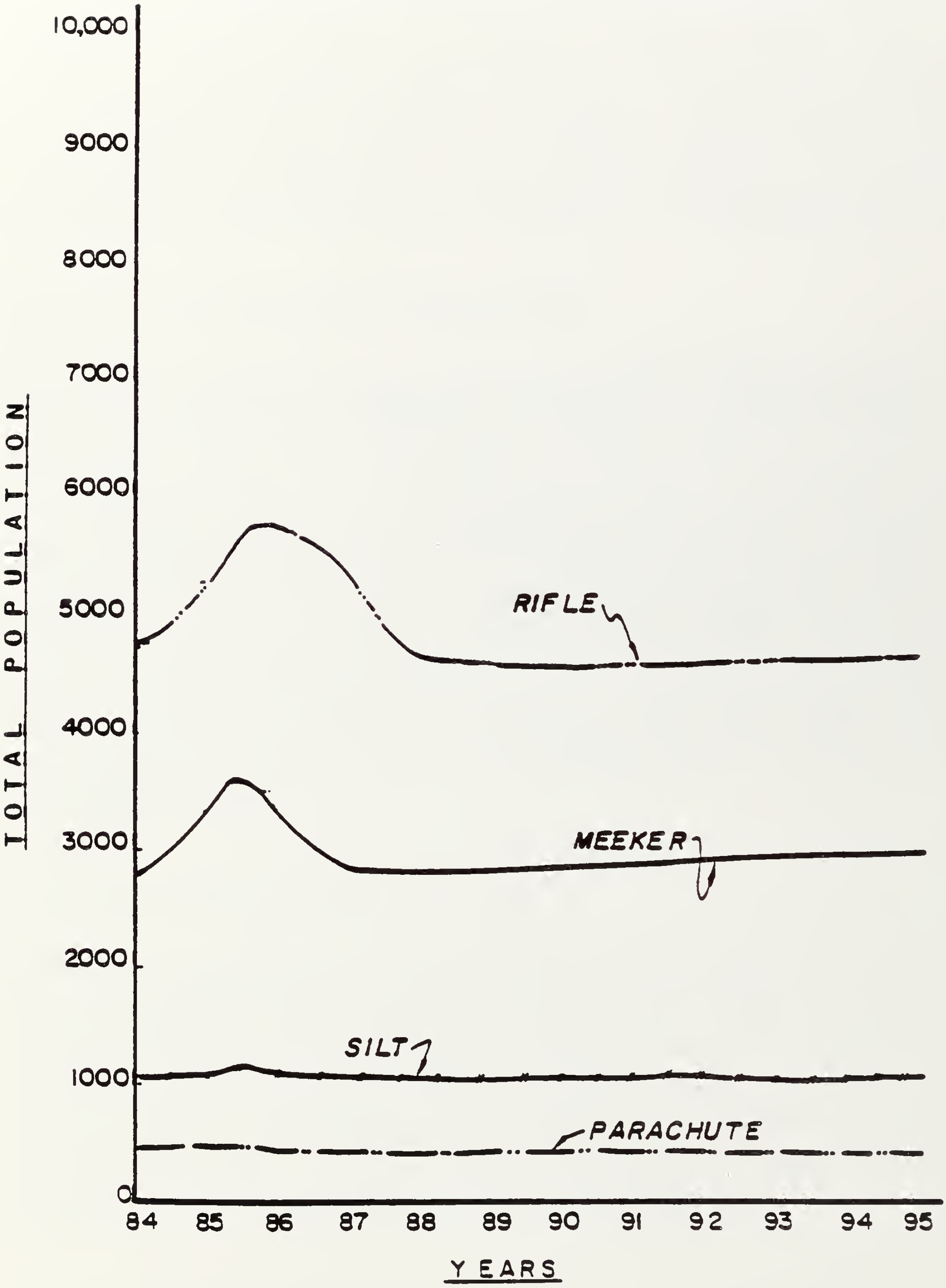


FIGURE 3.7-2

MUNICIPAL POPULATION FORECAST

PROJECT SUSPENSION CASE



3.7.2 FISCAL EFFECTS

The Fiscal Systems Model was used to determine the fiscal effects of suspension of the Project in 1986 upon local government jurisdictions. The population figures presented in Tables 3.7-2 and 3.7-3 were used in this analysis. The Project ad valorem tax base was adjusted to estimate the total valuation up to the point of suspension. After the point of suspension the Project assessed valuation was reduced to 60 percent of its actual assessed valuation for the remainder of the forecast period.

3.7.2.1 RIO BLANCO COUNTY JURISDICTIONS

Most local government jurisdictions in Rio Blanco County would not experience significant adverse fiscal impact as a result of the CB Project in 1986. Table 3.7-5 is a summary of the net fiscal balance from 1984-1986 for the seven jurisdictions in Rio Blanco County. Only the RE-1 School District and the Parks and Recreation District demonstrate significant net deficits through the period. All Rio Blanco County jurisdictions are projected to incur net fiscal surpluses from 1987-1990 primarily due to the residual assessed valuation of the Project as shown in Table 3.7-6. This future property tax revenue is projected to equal approximately $135,000 annually for the School District and $50,000 annually for the Parks and Recreation District.

3.7.2.2 GARFIELD COUNTY JURISDICTIONS

Table 3.7.7 shows the net fiscal balance to Garfield County jurisdictions from 1984-1986 which is projected to occur given Project suspension in 1986. The only jurisdictions which display significant deficits are Garfield County and the RE-2 School District. As in the Cumulative Case, the net deficit to Garfield County is actually a reduction in a projected substantial surplus. The net deficit projected for School District RE-2 is primarily due to required capital facility expansion.

Unlike jurisdictions in Rio Blanco County, Garfield County jurisdictions would not receive any residual property tax revenues if construction

activities on the CB Project were suspended. The only jurisdiction projected to require major capital facility expansion, the RE-2 School District, may experience difficulty in raising adequate revenues for the on-going operations of those expanded facilities. As shown in Table 3.7-8, Garfield County is the only jurisdiction projected to experience significant net fiscal deficits after the time of suspension.

TABLE 3.7-5

RIO BLANCO COUNTY JURISDICTIONS

NET FISCAL BALANCE 1984 - 1986

PROJECT SUSPENSION CASE
(Thousands 1982 $)

Jurisdiction	Total Revenue	Operating Expenditures	Surplus (Deficit)	Capital Expenditures	Total Surplus (Deficit)
Rio Blanco County	1612.3	1585.4	26.9	9.9	17.0
City of Meeker	914.6	557.4	357.2	30.3	326.9
Meeker RE-1 School District	1611.4	1591.0	20.4	413.5	(393.1)
Meeker Sanitation District	549.8	267.6	282.2	-	282.2
Meeker Rural Fire District	22.6	26.1	(3.5)	-	(3.5)
Meeker Library District	21.2	23.8	(2.6)	-	(2.6)
E. Rio Blanco Parks & Rec. District	73.2	69.6	3.6	77.1	(73.5)
TOTAL	4805.1	4120.9	684.2	530.8	153.4

Source: Crane and Associates, using the Fiscal Systems Model

TABLE 3.7-6

RIO BLANCO COUNTY JURISDICTIONS
NET FISCAL BALANCE 1987 - 1990
PROJECT SUSPENSION CASE
(Thousands 1982 $)

Jurisdiction	Total Revenue	Operating Expenditures	Surplus (Deficit)	Capital Expenditures	Total Surplus (Deficit)
Rio Blanco County	857.2	201.8	655.4	-	655.4
City of Meeker	143.5	64.4	79.1	-	79.1
Meeker RE-1 School District	1442.9	511.0	931.9	-	931.9
Meeker Sanitation District	27.1	10.1	17.0	-	17.0
Meeker Rural Fire District	108.5	2.9	105.6	-	105.6
Meeker Library District	81.7	2.8	78.9	-	78.9
E. Rio Blanco Parks & Rec. District	247.5	7.9	239.6	-	239.6
TOTAL	2908.4	800.9	2107.5	-	2107.5

Source: Crane and Associates, using the Fiscal Systems Model

TABLE 3.7-7
GARFIELD COUNTY JURISDICTIONS
NET FISCAL BALANCE 1984 - 1986
PROJECT SUSPENSION CASE
(Thousands 1982 $)

Jurisdiction	Total Revenue	Operating Expenditures	Surplus (Deficit)	Capital Expenditures	Total Surplus (Deficit)
Garfield County	729.2	886.6	(157.4)	59.6	(217.0)
City of Rifle	1185.1	1029.5	155.6	167.0	(11.4)
Town of Silt	66.5	54.3	12.2	4.6	7.6
Town of Parachute	158.7	145.1	13.6	-	13.6
RE-2 School District	863.4	804.3	59.1	1159.1	(1100.0)
#16 School District	868.8	643.0	43.8	-	43.8
Rifle Fire Department	9.5	18.5	(9.0)	-	(9.0)
Silt/New Castle Fire District	.9	2.0	(1.1)	-	(1.1)
Grand River Hospital District	609.7	463.4	146.3	-	146.3
TOTAL	4309.8	4046.7	263.1	1390.3	(1127.2)

Source: Crane and Associates, using the Fiscal Systems Model

TABLE 3.7-8

GARFIELD COUNTY JURISDICTIONS

NET FISCAL BALANCE 1987 - 1990

PROJECT SUSPENSION CASE
(Thousands 1982 $)

Jurisdiction	Total Revenue	Operating Expenditures	Surplus (Deficit)	Capital Expenditures	Total Surplus (Deficit)
Garfield County	197.1	370.6	(173.5)	-	(173.5)
City of Rifle	454.3	471.6	(17.3)	-	(17.3)
Town of Silt	21.3	22.2	(0.9)	-	(0.9)
Town of Parachute	24.0	18.8	5.2	-	5.2
RE-2 School District	311.0	281.3	29.7	-	29.7
#16 School District	87.5	73.0	14.5	-	14.5
Rifle Fire Department	5.7	10.4	(4.7)	-	(4.7)
Silt/New Castle Fire District	1.0	3.5	(2.5)	-	(2.5)
Grand River Hospital District	169.3	124.0	45.3	-	45.3
TOTAL	1271.2	1375.4	(104.2)	-	(104.2)

Source: Crane and Associates, using the Fiscal Systems Model

3.7.3 HOUSING EFFECTS

This section summarizes the housing effects upon the two Study Area counties should CB terminate development midway through the Project's construction period. Table 3.7-9 illustrates the workforce housing demand figures associated with a suspension scenario. As shown, the Project-related housing demand will terminate at the end of 1986.

Should the suspension scenario occur, the major effect upon the Study Area will be a return to an over capacity of housing, as currently exists. As indicated in Figure 3.7-3, total housing demand should not exceed the existing housing stock supplemented by the temporary housing on-site. Therefore, additional permanent housing should not be built which would add to the over capacity problem.

The construction mancamp will serve to mitigate the potential housing surplus because this housing will not become part of the permanent housing stock. These units, which are relocatable, will eliminate the need to develop additional units beyond the permanent operations and induced workforce requirement.

TABLE 3.7-9

CATHEDRAL BLUFFS PROJECT
HOUSING DEMAND BY JURISDICTION[1]
(SUSPENSION SCENARIO)

	Rio Blanco County			Garfield County				
Year	Mancamp	Meeker	Other	Rifle	Silt	P/BM[2]	Other	Total
				DIRECT CONSTRUCTION WORKFORCE				
1984	0	34	1	97	6	12	6	156
1985	450	39	1	130	9	26	9	664
1986	576	159	7	200	40	520	41	1,543
				DIRECT OPERATIONS WORKFORCE				
1984	--	26	1	91	5	3	5	131
1985	--	106	4	242	14	7	14	387
1986	--	141	6	317	18	9	18	509
				INDUCED WORKFORCE				
1984	--	26	1	34	2	2	2	67
1985	--	180	7	70	4	2	4	267
1986	--	207	8	140	10	70	10	445
				PROJECT-RELATED NEW HOUSING DEMAND				
1984	0	86	3	222	13	17	13	354
1985	450	325	12	442	27	35	27	1,318
1986	576	507	21	657	68	599	69	2,497
				BASELINE				
1984	--	934	--	1,841	420	740	--	3,935
1985	--	947	--	1,803	413	710	--	3,873
1986	--	974	--	1,798	412	690	--	3,874
				TOTAL HOUSING DEMAND				
1984	0	1,020	3	2,063	433	757	13	4,289
1985	450	1,272	12	2,245	440	745	27	5,191
1986	576	1,481	21	2,455	480	1,289	69	6,371

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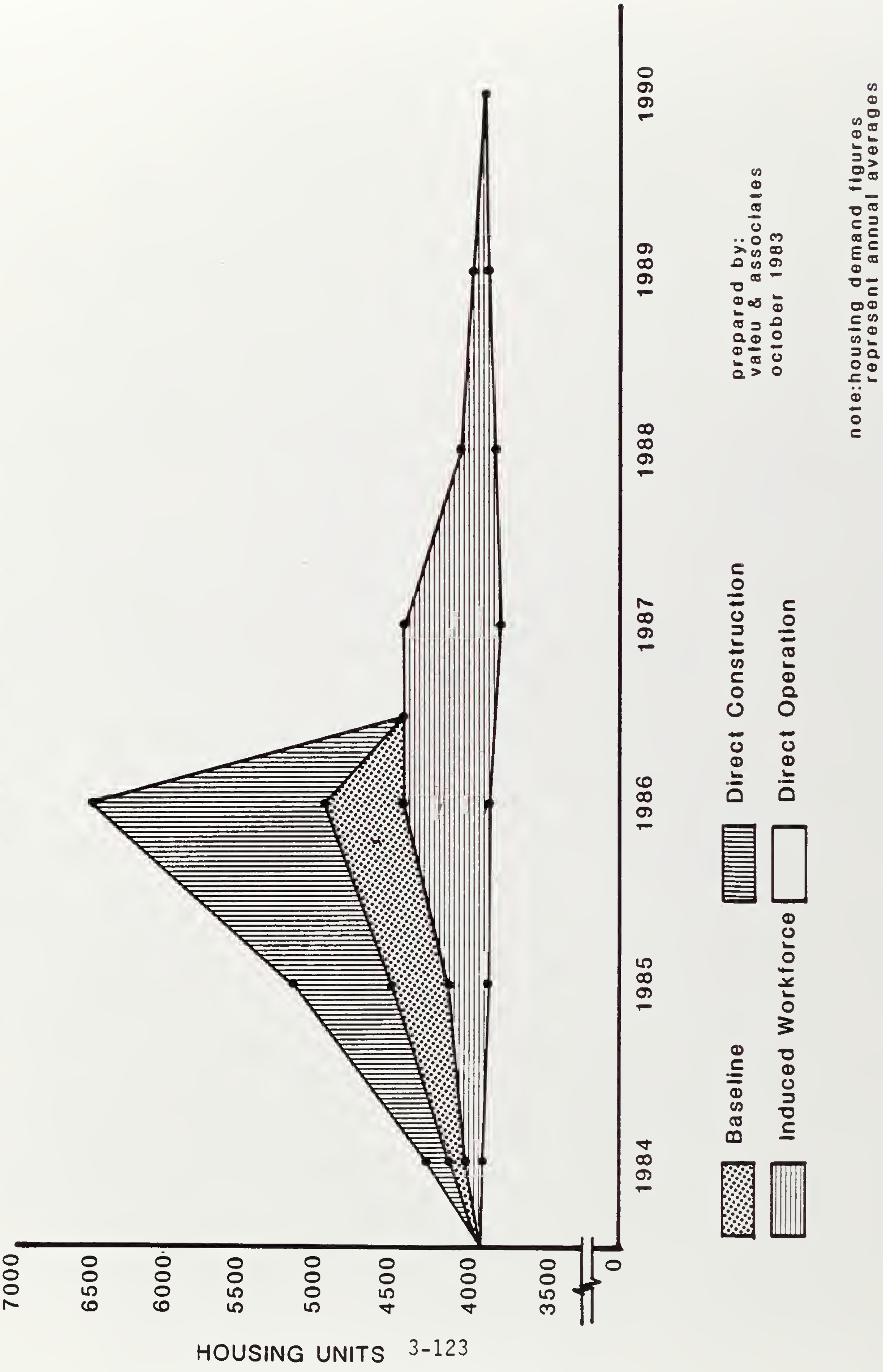
[1] The housing demand figures represent annual averages for Case #2.
[2] P/BM - Parachute/Battlement Mesa.

SOURCE: Cathedral Bluffs (PAS Model)

CATHEDRAL BLUFFS PROJECT
TOTAL WORKFORCE HOUSING DEMAND
(SUSPENSION SCENARIO)



prepared by:
valeu & associates
october 1983

note: housing demand figures represent annual averages

4.1 HOUSING

4.1 HOUSING

The CB Project has developed a Housing Master Plan. The plan addresses the housing issues, needs and proposed mitigation measures necessary to minimize socioeconomic impacts upon the communities within Rio Blanco and Garfield counties. The mitigation measures identified in the plan require action by not only the CB Project, but also by public officials and the private housing industry; including builders, developers and financial institutions.

The plan as discussed here has four primary objectives:

1. Effectively utilize existing housing vacancies within a reasonable daily commuting distance of the CB plant site.
2. Provide adequate temporary housing facilities at the plant site to minimize the number of vacancies after construction.
3. Provide housing facilities within close proximity of the construction site to insure availability of workers, thus minimizing turnover, absenteeism and fatigue, which impact productivity and eventually Project costs.
4. Facilitate the housing industry's ability to respond to new permanent housing requirements as they develop during the construction phase.

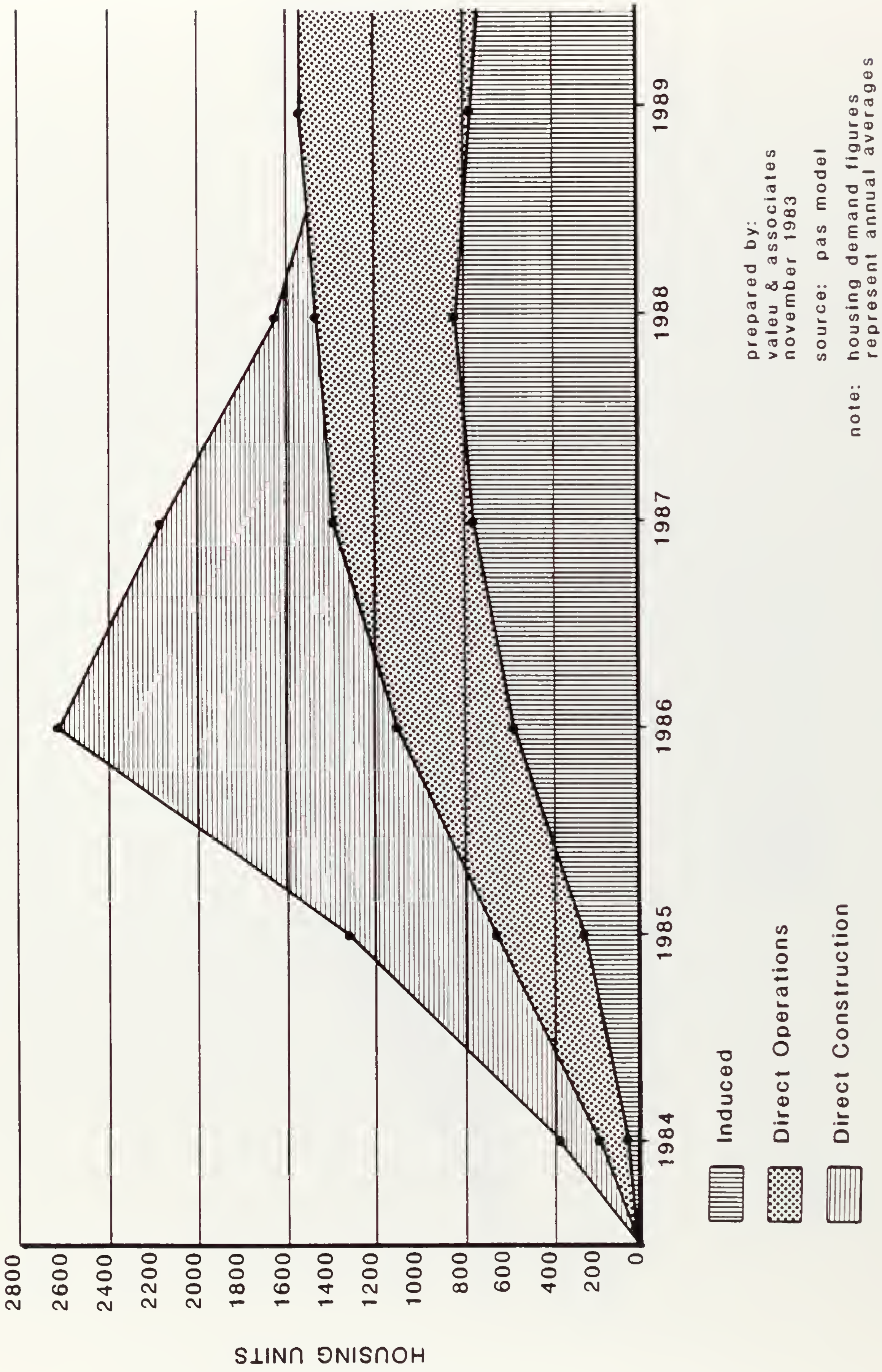
This section addresses primarly Cathedral Bluffs' housing mitigation plan which includes provisions for both temporary workers and the permanent operations workforce. The plan as outlined will facilitate housing for the induced workforce as well.

Figure 4.1-1 presents both temporary and permanent housing demand as it relates to the total projected housing demand in the Project area. The combined induced, permanent CB workforce, and CB construction workforce housing demand is projected to be 2640 total units in 1986 and 1540 total units by 1989. This demand added to the baseline totals 6512 total units in 1986 and 5418 total units in 1989 as shown in Figure 4.1-2.

Of the total new housing demand associated with the CB Project approximately 58 percent is considered temporary housing required for only three

FIGURE 4.1-1

CATHEDRAL BLUFFS PROJECT
TOTAL WORKFORCE HOUSING DEMAND



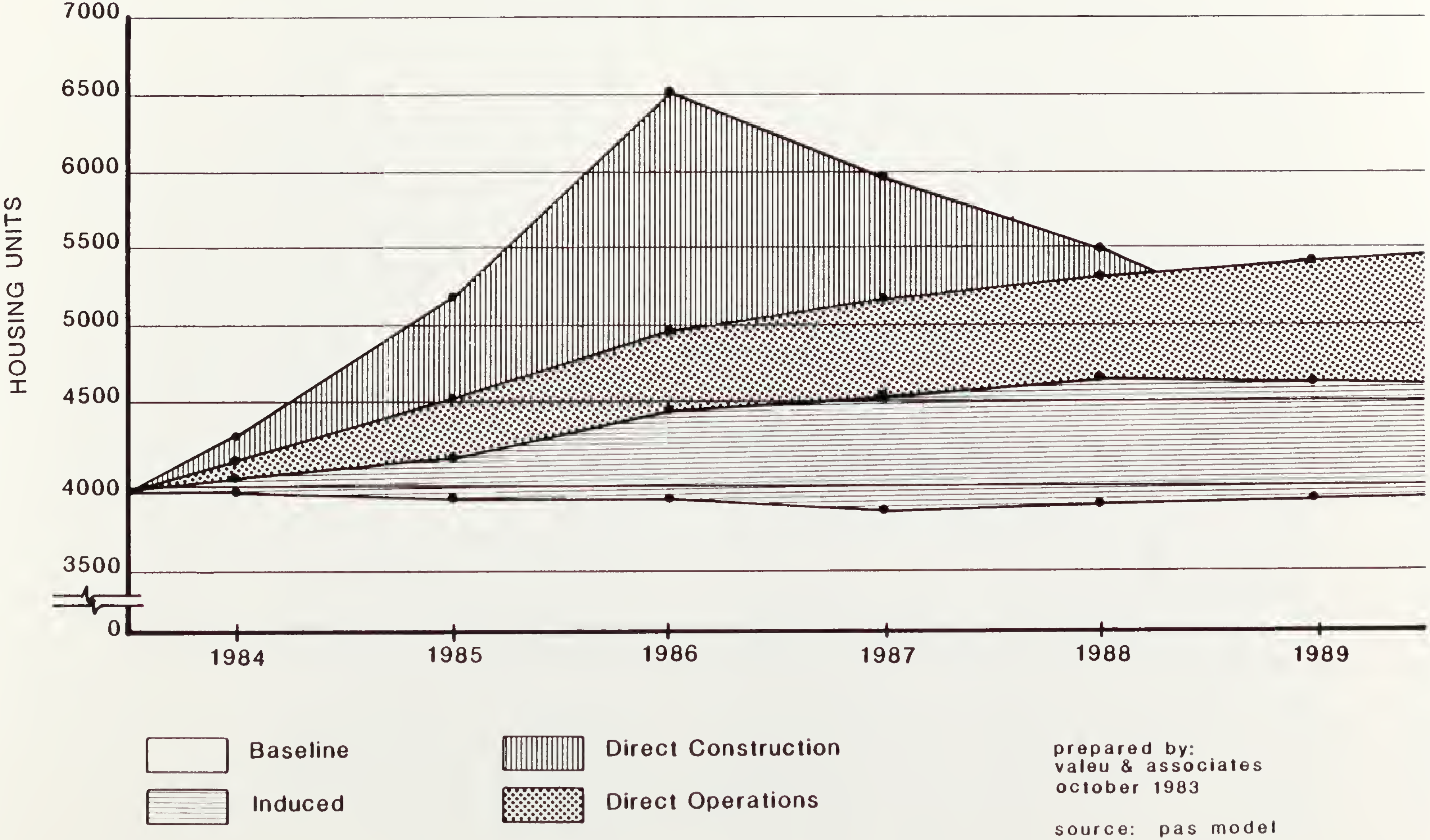
prepared by:
valeu & associates
november 1983

source: pas model

note: housing demand figures
represent annual averages

FIGURE 4.1-2

CATHEDRAL BLUFFS PROJECT
TOTAL HOUSING DEMAND



prepared by:
valeu & associates
october 1983

source: pas model

note: housing demand figures
represent annual averages

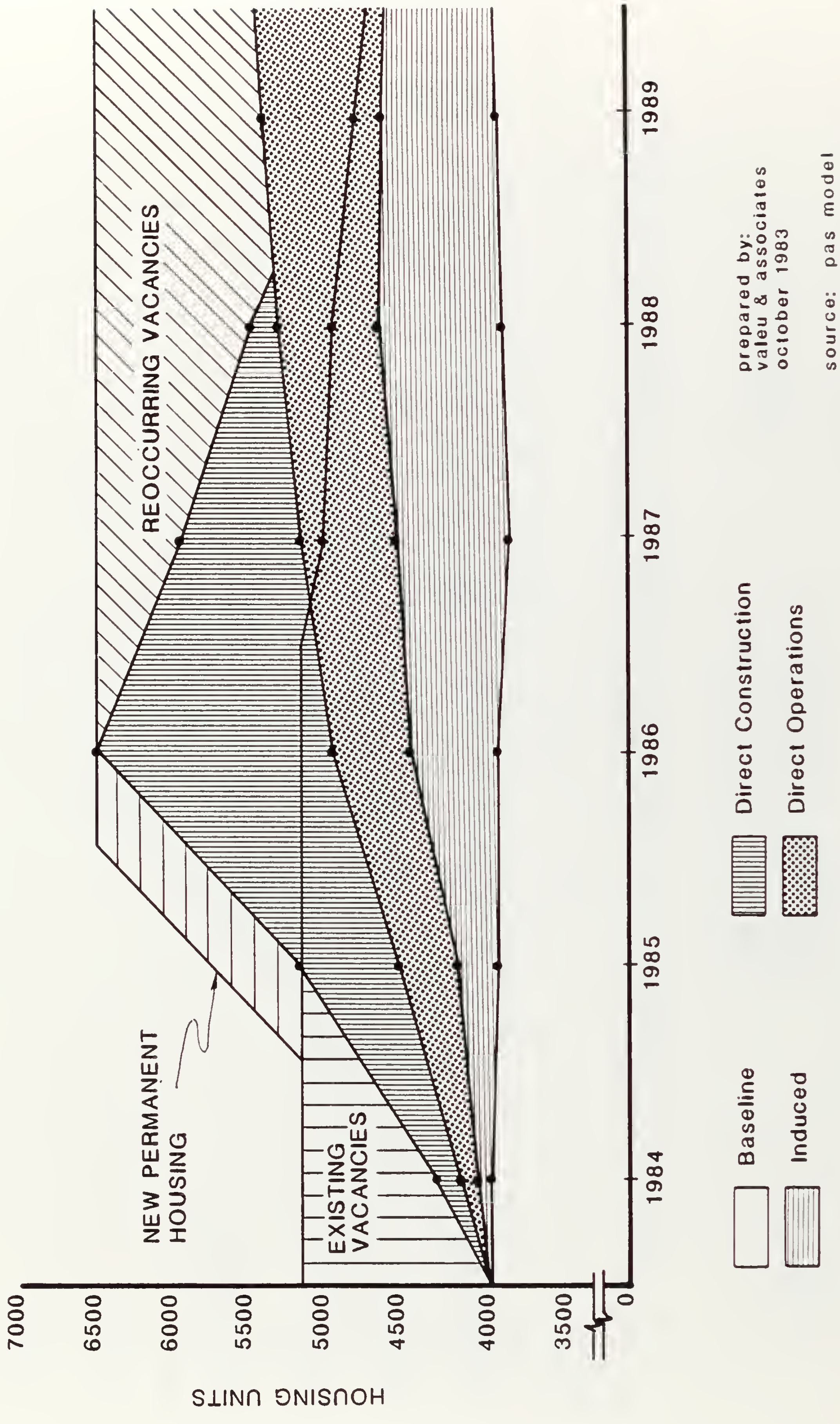
to four years. The remaining 42 percent represents long-term permanent housing demand.

Figure 4.1-3 overlays 1150 existing vacancies that have been identified as accessible housing within a reasonable daily commuting distance of the Project site, upon the total demand curve. By 1985 these vacancies will be filled and by 1987 vacancies will begin to reoccur as the direct construction workforce leaves the area. CB has identified mitigation measures that will allow vacant units in Meeker and Rifle to be converted for use by permanent operations workers. Vacancies located in Parachute and Battlement Mesa will serve the temporary needs of the construction workforce, however their distance to the plant site will not make them preferred units for the permanent operations workers. Therefore, as the temporary workforce vacates units in Parachute and Battlement Mesa they are expected to remain vacant even though there is an increased demand for housing being generated by the permanent operations workforce and induced workers. This demand is expected to increase the need for housing in Meeker and Rifle since these are the closest communities to the plant site. CB prefers that the operating workforce be located as close as possible to the site.

In addition to the existing vacancies, an additional 1450 living units are required to meet the peak demand in 1986. If this increased demand is met with only permanent housing, as illustrated in Figure 4.1-3, then a significantly high number of vacancies will re-occur beginning in 1986 as temporary construction workers leave the area. By combining the use of existing vacancies, new permanent housing stock in Rifle and Meeker with the 850 unit temporary mancamp, the number of potential vacancies after 1986 is reduced (Figure 4.1-4) since the mancamp facilities, unlike permanent housing stock, will be removed from the supply of available housing.

FIGURE 4.1-3

CATHEDRAL BLUFFS PROJECT TOTAL HOUSING DEMAND/SUPPLY

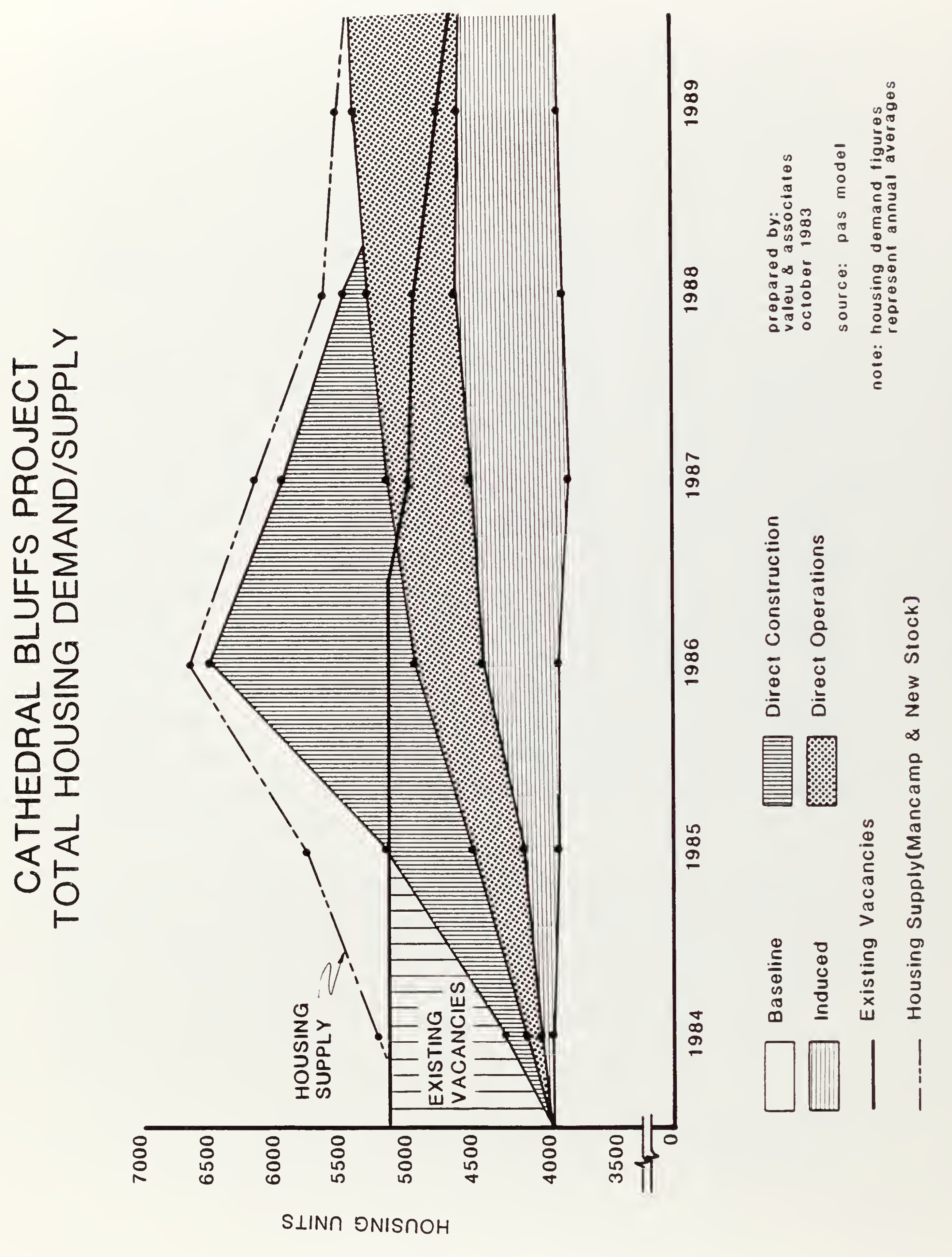


prepared by:
valeu & associates
october 1983

source: pas model

note: housing demand figures
represent annual averages

FIGURE 4.1-4


CATHEDRAL BLUFFS PROJECT
TOTAL HOUSING DEMAND/SUPPLY
HOUSING UNITS
7000
6500
6000
5500
5000
4500
4000
3500
0
1984
1985
1986
1987
1988
1989
HOUSING SUPPLY
EXISTING VACANCIES
Baseline
Induced
Direct Construction
Direct Operations
Existing Vacancies
Housing Supply(Mancamp & New Stock)
prepared by:
valeu & associates
october 1983
source: pas model
note: housing demand figures represent annual averages

4.1.1 TEMPORARY HOUSING PROGRAM

There are two programs planned to facilitate the availability of housing to meet the temporary direct construction workforce demand. The mix, low rental rates and proximity to the CB plant site will be strong incentives for in-migrating construction workers to fill existing vacancies. It is expected that up to 750 vacancies will be filled by the construction workforce. To facilitate this program and assure crossover utilization between the temporary workforce and permanent operations workers CB will master lease up to 200 vacant units in Meeker and Rifle. This program is discussed in Section 4.1.3. The other program is the construction of an 850 unit mancamp at the CB plant site. The on-site mancamp will serve four major functions. First, it will provide strictly temporary housing and will not add to the potential of over building a supply of housing that cannot be maintained once the construction workforce leaves the area (Figure 4.1-3). Second, it will serve the specific housing needs of those construction workers who prefer not to relocate their families into the area. Minimizing the relocation of additional families will also benefit the local communities by lessening new temporary demands on public facilities and services. Third, the mancamp will benefit the Project by having a large increment of its workforce close to the plant site. The close proximity factor minimizes fatigue, absenteeism, and turnover, which in turn enhances productivity, with resultant lower cost to the Project. The fourth area relates to traffic and safety on the highways. The mancamp at the plant site will reduce traffic congestion on the highways and reduce potential traffic problems.

Three types of housing accommodations are proposed for the mancamp. A combination of recreational vehicle spaces and mobile, motel-style units will be developed for up to 350 units. Single status modular, motel-style units will be built for up to 500 workers. In addition to the living facilities, other amenities and support facilities will be developed. Section 2.2.2 of the application defines the mancamp in more detail.

The design as described must be flexible to allow CB the option to build the initial component for either a full compliment of 350 recreational

vehicle spaces and support facilities or a combination of recreational vehicle spaces (e.g., 200) and mobile, motel-style living quarters (e.g., 150). This flexibility is necessary due to the uncertainty in estimating initial demand for RV space. Scheduled development of this first component will take place beginning in the 4th quarter of 1983 with completion by the 4th quarter of 1985.

The recreational vehicle facilities are needed in the early stages of the construction schedule. Once the local labor pool has been absorbed then a substantial in-migrating labor force is expected to come from regional labor markets, such as Grand Junction, Denver and Salt Lake City. As experienced in other energy projects in the region, a high percentage of these weekly commuters will utilize recreational vehicles as their primary means of temporary housing. The recreational vehicle facility at the plant site will provide immediate housing facilities, thus minimizing the potential for dispersion of these units on public and private property in the general area of the plant site.

Based on the forecast of housing demand in Figure 4.1-3, the on-site housing facilities are needed in mid-1985. Development of the mancamp will progress so as to keep pace with the rate at which housing in the Project area communities is occupied. The principal indicator of housing availability is the vacancy rate, and particularly the vacancy rate for rental properties. As a general criterion, if the vacancy rate for rental properties in Rifle and Meeker drops below 10 percent, additional units will be added at C-b. The lead time required (90-120 days) for motel-style units is not critical since a 10% vacancy in rental units will provide an adequate cushion of housing for this interim period. Other indicators that will influence the rate at which units will be installed include: a significant increase (e.g., 10+%) in the total manpower requirements, or a significant decrease in the availability of local residents to take jobs created by the Project.

If additional temporary housing is required there are two alternatives available. One is the utilization of over 600 existing mobile home spaces in Battlement Mesa (see Table 3.1-12). In addition, the CB Project has property in Rifle that can be expanded to provide over 300 mobile home spaces.

4.1.2 PERMANENT HOUSING PLAN

As discussed in the previous section, the combination of existing vacancies and a conservative projection for new housing development should adequately provide for long-term housing demand within the Project area. Should expectations change regarding the demand for permanent housing, CB will be prepared to utilize the residential property owned by the Project in Rifle to insure that an adequate housing supply exists. This property consists of Phase II of the Kings Crown Mobile Home Park which would provide 150 mobile home spaces, and the 113 acre Condon parcel, which could potentially provide 580 units of mobile home, townhouse and multi-family housing.

4.1.3 TRANSITIONAL HOUSING PLAN

In order to facilitate the assimilation of temporary and permanent Project employees into the communities of Rifle and Meeker, CB plans to master lease approximately 200 existing rental housing units. Table 4.1-1 details the location and type of units to be leased.

TABLE 4.1-1

PROPOSED MASTER LEASE PROGRAM
(No. of Units is Approximate)

Housing Type	Meeker	Rifle	Total
Apartments	75	100	175
Condominiums/Townhouses	0	25	25
TOTAL	75	125	200

Source: Valeu & Associates, Inc.

By controlling these units, CB can insure that housing will be immediately available for employees with critical skills. Insofar as operating personnel are concerned, it will be the intent to manage these master leased units to facilitate a transition of permanent workers into long-term residences in Rifle and Meeker as soon as possible, freeing the leased units for temporary use by other incoming personnel. This transitional

program will settle as many operations personnel as possible into permanent housing in Rifle and Meeker.

4.1.4 HOUSING INFORMATION PROGRAM

In an effort to assist construction workers and operations employees in finding satisfactory housing, a housing office will be set up and maintained to provide the employee with current data on the availability of both rental and for sale properties. Information would include type of housing, costs, location, and available public services and facilities. The data maintained will form an important part of the information base for the housing monitoring program described under Section 4.4.4.

4.1.5 SUMMARY

The housing master plan is based on current conditions relative to housing vacancies and the projected manpower for both construction workers and permanent employees associated directly with the CB Project.

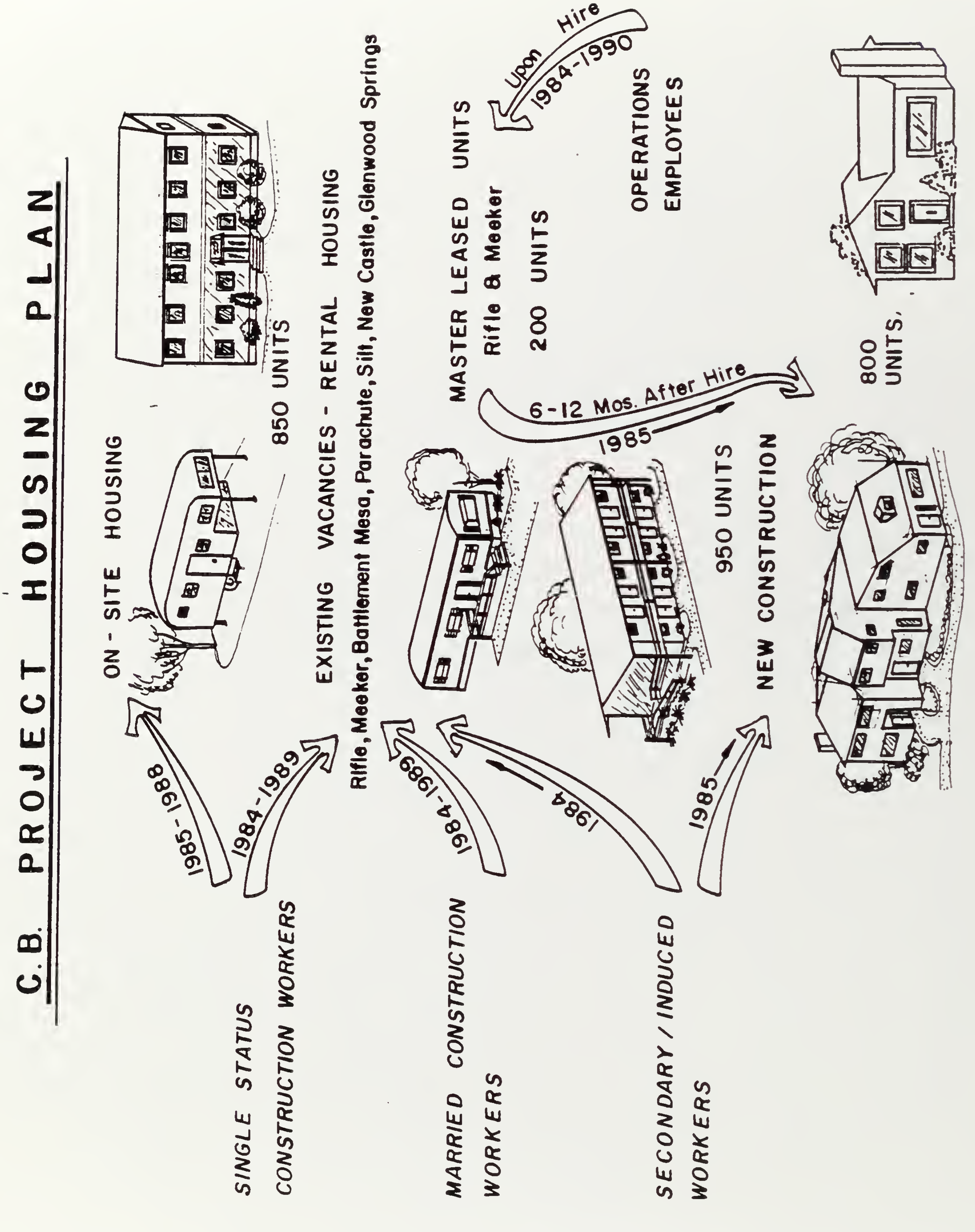
One of the major objectives of the housing master plan is to utilize existing vacancies within a reasonable commuting distance of the CB plant site. Filling existing vacancies is primarily predicated on the basis that the vacancies will be attractive in terms of type of housing, location, and costs. However, it is important that not all the existing vacancies are absorbed by the temporary construction workforce. If they are, then the demand created by the permanent and induced workforces will have to be met with additional new permanent housing stock. The result will be an excess of permanent housing units when the construction workforce departs the area in 1986-88. The mancamp becomes an important factor in controlling potential overbuilding since the facilities do not add to permanent housing stock.

The CB master-lease program becomes an important program in managing the transitional use of existing vacancies between the temporary workforce and the permanent workforce. The master-lease program will be initiated in

Meeker and Rifle since it is in these two counties that CB desires the transition to take place, affording permanent employees housing as close to the site as possible.

Figure 4.1-5 graphically summarizes the CB Project Housing Plan.

FIGURE 4.1-5


C.B. PROJECT HOUSING PLAN
SINGLE STATUS CONSTRUCTION WORKERS
MARRIED CONSTRUCTION WORKERS
SECONDARY / INDUCED WORKERS
1985-1988
1984-1989
1984-1989
1984
1985
ON - SITE HOUSING
850 UNITS
EXISTING VACANCIES - RENTAL HOUSING
Rifle, Meeker, Battlement Mesa, Parachute, Silt, New Castle, Glenwood Springs
NEW CONSTRUCTION
950 UNITS
1985
6-12 Mos. After Hire
MASTER LEASED UNITS
Rifle & Meeker
200 UNITS
Upon Hire
1984-1990
OPERATIONS EMPLOYEES
800 UNITS

4.2 EMPLOYEE TRANSPORTATION

4.2 EMPLOYEE TRANSPORTATION

The CB Project will develop a busing program for construction workers and permanent employees. The objectives of the program are:

1. To provide the safest possible transportation system for CB construction workers and operating employees under all circumstances.
2. To provide efficient transportation service not only in terms of user convenience and benefit, but also to maintain suitable operating expenses.
3. To provide an economical transportation system in terms of overall investment, which is competitive with contemporary values and feasible modes.
4. To provide the fastest transportation system for the CB employees under all circumstances and consistent with required safety practices.
5. To provide a system that will be readily used by employees.

There will be two busing systems implemented. One will be an off-site system to provide transportation from home to work. The other will be provided for on-site travel between the mancamp and the work areas on the plant site. The bus schedules will be developed based on work schedule requirements throughout the construction phase of the Project. The buses used for the off-site transportation will be 48-passenger over-the-road coaches. The buses for the on-site services will be 48-passenger shuttle buses.

The bus service will be provided at no charge to the employee. Additionally, there will be a disincentive for single-person vehicle transportation due to the restricted parking facilities. The bus system is expected to transport 90 percent of construction employees and 75 percent of operations employees commuting to the site on a daily basis.

4.2.1 ON-SITE BUSING

The on-site busing will serve primarily to move construction workers within the construction site area. It will also serve to transport construction

workers from the mancamp to work stations on the plant site. It is estimated that approximately 10 buses will be required in the peak year of 1986 to meet this requirement.

4.2.2 OFF-SITE BUSING

The off-site busing will serve both the construction workforce and the permanent operating personnel during the construction period. Bus service will be provided from three communities: Rifle, Meeker, and Parachute-Battlement Mesa. As needed, staging areas will be designated and proper facilities constructed to accommodate the parking of personal vehicles on a daily and weekly basis. During the peak construction year of 1986, it is estimated that 2,100 individuals will be utilizing the busing system.

At the peak of construction in 1986, approximtely 26 buses would be utilized to transport both the construction workforce and permanent employees. It is estimated that up to 500 vehicles during the peak construction period will be eliminated from the highways on a daily basis. This reduction in vehicle traffic will significantly reduce the potential for traffic accidents and highway congestion.

Prior to the completion of Project construction the employee transportation program will be reviewed and a proposal for a long-term employee transportation program will be developed.

4.3 LOCAL GOVERNMENT FISCAL IMPACTS

4.3 LOCAL GOVERNMENT FISCAL IMPACTS

As discussed in Section 3.1, local government jurisdictions in the CB Project area have accomplished a substantial amount of public facility improvements in recent years. These improvements have been financed through a variety of sources, but the proceeds of the Oil Shale Trust Fund (OSTF) and the Energy and Mineral Impact Fund have accounted for a major portion of that financing.

The CB Project initially contributed over $24 million to the Oil Shale Trust Fund. Along with contributions from the C-a lease tract and interest earned on the fund, a total of $103.4 million has been made available for public purposes from the OSTF. Table 4.3-1 is an accounting of proceeds distributed from the OSTF and the Energy and Mineral Impact Fund through 1982. Table 4.3-2 lists appropriations from the OSTF to jurisdictions which will be most affected by the CB Project.

In addition to the OSTF, the CB Project has made contributions to numerous community assistance projects since 1978. Table 4.3-3 is a listing of these contributions made by the Project.

As a result of the public improvement projects accomplished in recent years, communities in Eastern Rio Blanco and Western Garfield counties have facilities which enable them to provide a better level of service to existing residents, and to accommodate additional population. Population growth resulting from the development of the CB Project can be accommodated without a large fiscal burden upon most local government jurisdictions, according to the analysis contained in Section 3.4. Some jurisdictions, however, will require outside financial assistance in order to adequately accommodate Project related growth. This section addresses the significant fiscal shortfalls identified by the Fiscal Systems Model, and methods by which those shortfalls can be mitigated.

TABLE 4.3-1

COLORADO'S IMPACT ASSISTANCE DISBURSEMENTS 1975-1982

County	Oil Shale Trust Fund	Energy Impact Fund	Total
Moffat	$ 5,728,391	$ 6,179,998	$ 11,908,389
Mesa	15,344,196	6,552,559	21,896,755
Garfield	42,136,158	10,005,396	52,141,534
Rio Blanco	33,852,236	2,319,510	36,171,746
Routt	966,000	4,413,384	5,379,384
Other	5,363,455*	24,960,645**	30,324,100
TOTAL	$103,390,436	$ 54,431,492	$157,821,928

Source: Colorado Department of Local Affairs

*Funds to State Offices and Regional Council of Governments, Etc.
**Funds to Other Counties

TABLE 4.3-2

OIL SHALE TRUST FUND APPROPRIATIONS TO WESTERN GARFIELD AND EASTERN RIO BLANCO COUNTIES - 1975-1982

City of Rifle	$12,631,989
Town of Silt	3,591,658
RE-2 (Rifle) School District	14,639,816
Garfield County	5,835,700
Grand River Hospital District (Rifle)	641,830
Town of Meeker	3,077,500
Meeker Sanitation District	1,808,000
RE-1 (Meeker) School District	1,982,600
Rio Blanco County	18,201,577
TOTAL	$62,410,670

Source: Colorado Department of Local Affairs

TABLE 4.3-3

CATHEDRAL BLUFFS SHALE OIL COMPANY COMMUNITY ASSISTANCE CONTRIBUTIONS 1978 - PRESENT

Type of Assistance	Amount
Technical Assistance	$416,202
Hospital and Health Car Contributions	21,600
Civic Organization Contributions	17,900
City/County Agency Contributions	85,000
TOTAL	$540,702

Source: Cathedral Bluffs Shale Oil Company

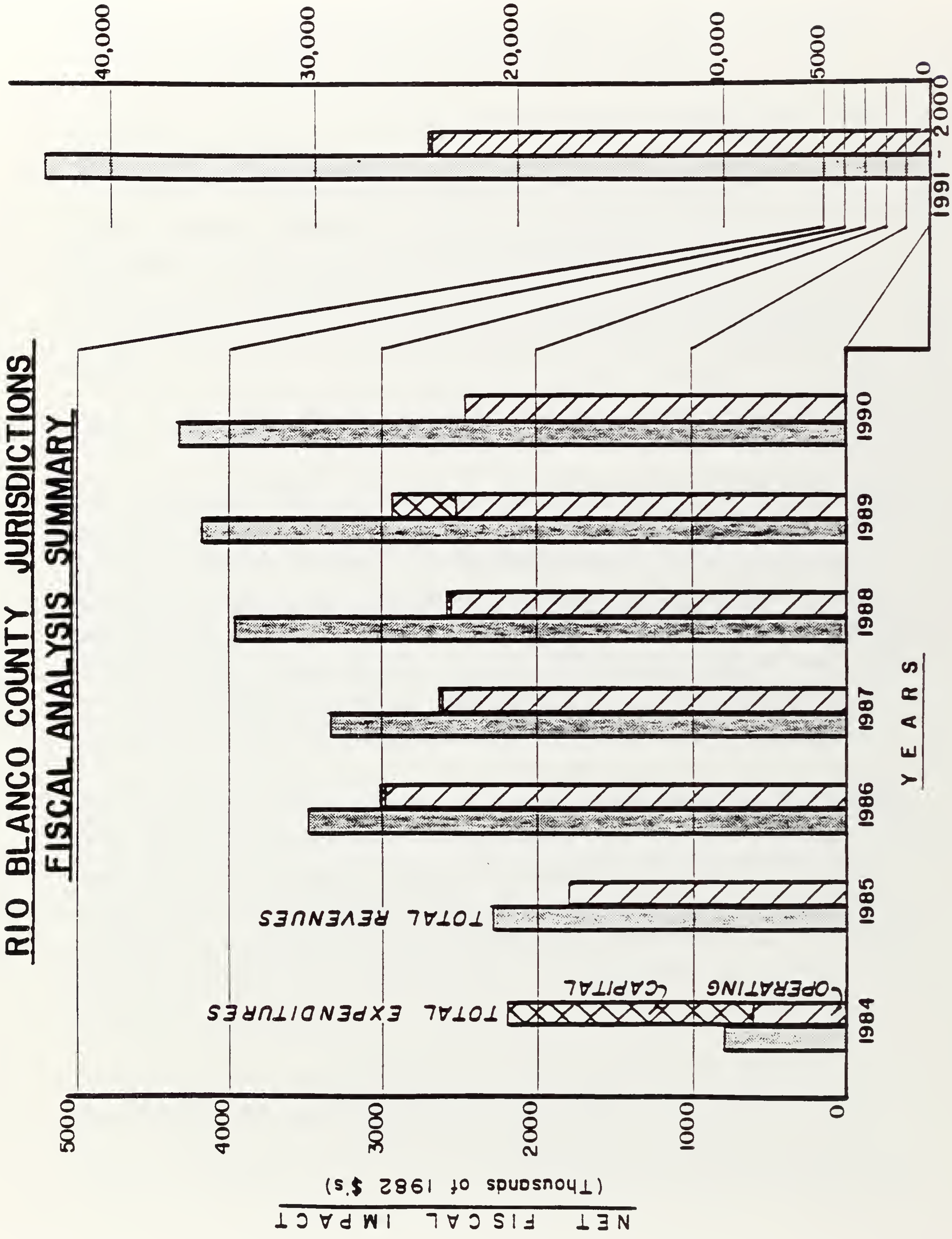
4.3.1 RIO BLANCO COUNTY JURISDICTIONS

Over the life of the CB Project, Rio Blanco County jurisdictions are projected to benefit from increased public revenues which substantially exceed increased public costs. Figure 4.3-1 shows projected increased revenues to all seven Rio Blanco County jurisdictions of $65,637,000 (1982 $) from 1984-2000, as a result of the CB Project. The same figure indicates an increase in total expenditures of $41,931,000 (1982 $) from 1984-2000 as a result of the Project, for a net benefit of $23,656,000 (1982 $). Figure 4.3-1 also indicates that the net fiscal benefit accruing from the Project does not materialize until 1988, or after construction is essentially completed. As indicated in the figure, most public sector capital expenditures required to support the Project will be necessary in 1984. The timing and the amount of these immediate capital expenditures represent the nucleus of the fiscal shortfall problem in Rio Blanco County. Some consideration is also warranted to the approximately $80,000 in net operating deficits expected to accrue to the County, the Fire District and the Library District from 1984-1986.

The CB Project believes that the first source of financial assistance which should be utilized to address these fiscal requirements is the County Capital Improvement Trust Fund (CCITF), derived from the Oil Shale Trust Fund (OSTF). Currently, Rio Blanco County has over $16 million of uncommitted monies in the CCITF. The $2.2 million needed to offset projected capital expenditure requirements due to the CB Project represents only 13 percent of that total.

The CCITF can also be used to offset the short term operating deficits expected to occur as a result of the Project. This can be accomplished by replacing General Fund revenues in a jurisdiction's budget which are earmarked for capital items, with CCITF funds, thus freeing the General Fund revenues to be used for the increased operating expenditures. For example, Rio Blanco County is projected to require expansion of its jail facilities whether or not the CB Project is developed. If a portion of that expansion cost included in the model projections (see Volume II - Appendices) is assumed to be financed by the CCITF, other revenues which

FIGURE 4.3-1


RIO BLANCO COUNTY JURISDICTIONS
FISCAL ANALYSIS SUMMARY
NET FISCAL IMPACT
(Thousands of 1982 $'s)
0
1000
2000
3000
4000
5000
YEARS
1984
1985
1986
1987
1988
1989
1990
1991 - 2000
TOTAL EXPENDITURES
OPERATING
CAPITAL
TOTAL REVENUES
0
5000
10,000
20,000
30,000
40,000

might otherwise be required for the jail expansion could be utilized to offset operating costs, thus eliminating any net deficit.

Even though the CCITF is available to finance public sector costs related to growth in Rio Blanco County, the CB Project is committed to working as a partner with local government in the task of growth management. CB will provide pertinent information concerning all phases of the Project to local governments for their use in planning and scheduling public sector projects. CB will also make the resources of its staff and the staff of its contractors available to assist local government in providing for growth.

4.3.2 GARFIELD COUNTY JURISDICTIONS

Over the Project life, Garfield County jurisdictions are also projected to receive a net fiscal benefit from the CB Project. Figure 4.3-2 displays the total increase in revenues and expenditures to Garfield County jurisdictions under both development scenarios. As indicated, the total projected net fiscal benefit to Garfield County jurisdiction from 1984-2000 is substantially lower than it is to Rio Blanco County jurisdictions. The net fiscal benefit to Garfield County jurisdictions from 1984-2000 is projected to be $7.6 million.

As in Rio Blanco County, the fiscal deficits projected to result from the CB Project in the early years of development exist primarily because of the failure of local revenues to meet the increase in both operating and capital costs. Some jurisdictions, such as Garfield County and the Town of Parachute, are projected to need assistance in meeting net operating cost deficits, but most of the fiscal deficit in 1984-1988 period is in the area of capital expenditures.

The most readily available source of financing capital expenditure requirements in Garfield County is also the OSTF. As of October 1983, Garfield County had $11.2 million in unexpended OSTF monies. Of this total, $4.7 million is allocated to the Garfield RE-2 School District for

capital facility expansion. The remainder of the funds are also allocated to specific projects as shown in Table 4-3.4. The use of OSTF monies to finance the capital expenditure requirements of District RE-2 would eliminate 58 percent, or $2.3 million of the total projected net capital cost of the CB Project.

A second source of financing additional expenditure requirements in Garfield County is the increase in assessed valuation brought about primarily through the development of the Union Oil Project. Garfield County's assessed valuation increased by $75 million from 1982-1983 directly as a result of the Union Project. The Union Project is expected to contribute $25 million in additional assessed valuation, to the County by 1985. This increase will generate additional property tax revenues annually for those jurisdictions which include the Union Project in their tax base. These additional property tax revenues should more than offset the net fiscal impact of the CB Project upon Garfield County, School District #16 and the Grand River Hospital District.

For those jurisdictions which do not have additional financial resources readily available from either the OSTF or an increased property tax base, the CB Project proposes to extend a combination of financial and technical assistance to address significant fiscal impacts. The output from the Fiscal Systems Model identifies a net operating deficit in the Town of Parachute due to the CB Project of $96,200 throughout the forecast period (Table 3.4-13). CB is willing to work with the Town of Parachute to offset this projected net deficit. CB will also assist the Town of Parachute in monitoring the actual effects of growth upon the town's fiscal condition and in structuring a revenue-producing program which takes advantage of new revenue sources resulting from growth and development.

The Fiscal Systems Model also projects a net operating deficit and net capital expenditure requirements for the Rifle Rural Fire District (see Table 3.4-22). CB is willing to work with the Fire District to offset the total capital expenditure requirement and the net operating cost deficit projected for the District. CB is also willing to work with the District to identify and secure other sources of financing for capital projects which may be available.

TABLE 4.3-4

STATUS OF 1981 AND 1982 OIL SHALE TRUST FUND GRANTS

September 28, 1983

Project	Total Appropriation	Expended to Date	Unused Funds
Garfield County Airport (400)	$2,645,000.00	$2,457,269.34	$ 187,730.66
Garfield County Courthouse (405)	$1,500,000.00	$1,500,000.00	-0-
Grand River Hospital Dist. (410)	$ 368,480.00	$ 368,480.00	-0-
New Castle Recreation (415)	$ 304,080.00	-0-	$ 304,080.00
New Castle Sewer (421)	$ 72,000.00	72,000.00	-0-
New Castle Water (420)	$ 678,000.00	$ 618,414.09	$ 59,585.91
Parachute Recreation (425)	$ 289,520.00	$ 289,520.00	-0-
Parachute Streets (430) (Originally Water)	$ 750,000.00	$ 750,000.00	-0-
Parachute Town Hall (435)	$ 287,616.00	$ 287,616.00	-0-
RE-2 School District (440)	$7,882,000.00	$3,204,996.22	$4,677,003.78
Rifle City Hall (445)	$1,712,586.00	$1,417,731.98	$ 294,854.02
Rifle Collector Streets (450)	$2,000,000.00	$1,609,575.35	$ 390,424.65
Rifle Recreation (455)	$2,839,222.00	$ 513,377.08	$2,325,844.92
Rifle Sewage Treatment (460)	$1,850,000.00	-0-	$1,850,000.00
Rifle Water & Sewer Line (4[illegible])	$ 738,000.00	$ 494,577.72	$ 243,422.28
School District #16 (470)	$ 720,870.00	$ 720,870.00	-0-
Silt City Hall/Fire Station (475)	$ 575,000.00	$ 574,902.95	97.05
Silt Low Income Housing (480)	$1,230,000.00	$ 915,790.58	$ 314,209.42
Silt Recreation (485)	$ 233,641.21	$ 22,745.00	$ 210,896.21
Silt Wastewater Treatment (490)	$ 478,380.79	$ 478,380.79	-0-
Silt Water Treatment (495)	$ 21,000.00	$ 17,696.45	$ 3,303.55
West Garfield Co. Human Service Bldg. (500)	$1,000,000.00	$ 700,165.51	$ 299,834.49
OSTF Administration (520)	$ 2,075.00	$ 2,075.00	-0-
	$28,177,471.00	$17,016,184.06	$11,161,286.94

Source: Garfield County

The net deficit which is projected for Garfield County is per se not a real deficit but a reduction in the fiscal surplus projected for the County as a result of increased property tax revenues from the Union Project. Given this increase in property tax base, Garfield County should not require additional financing to accommodate growth related to the CB Project.

An area which was not directly addressed by the Fiscal Systems Model, but for which a financial shortfall exists, is in the operating budget of the proposed West Garfield County Recreation Center. Since the construction of the center is dependent upon adequate operating revenues, CB will work with the Recreation District to develop necessary revenue over the three-year period from 1985-1987 to meet the projected operating shortfall of that center.

In addition to these direct financial contributions, the CB Project is willing to commit a portion of its employees' time to working with all affected local governments which have special problems related to planning for and managing growth. CB believes that by assisting local government in this way, the most efficient and cost effective solutions can be found to the variety of problems which will accompany growth and development.

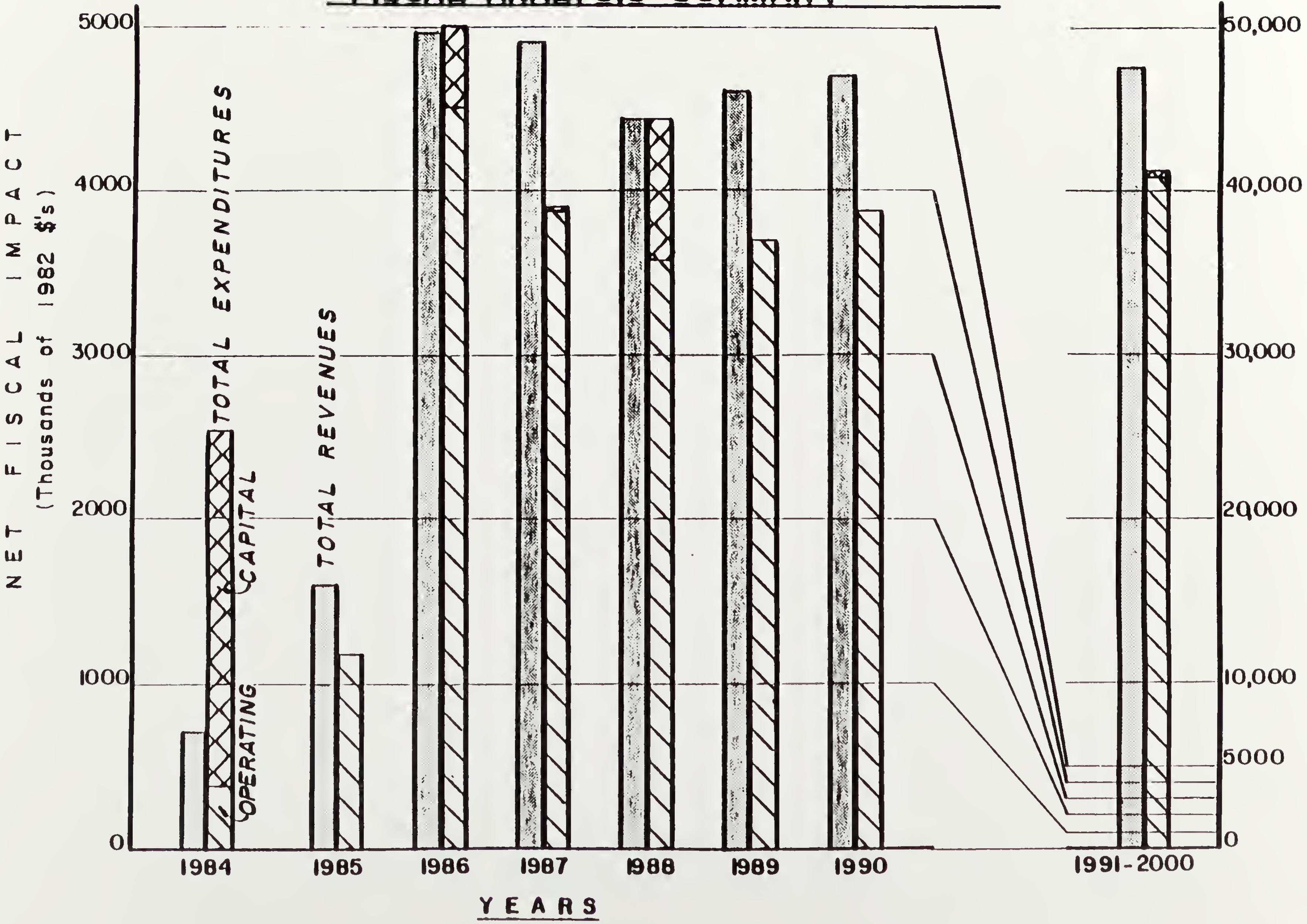
4.3.3 SPECIAL MEASURES ASSOCIATED WITH ON-SITE HOUSING

CB realizes that the operation of an on-site housing facility will require that some special measures be undertaken to insure the health and safety of both the residents of that facility and the other residents of the Project area. In response, CB will work with the Rio Blanco County Sheriff Department and the Garfield County Sheriff Department to implement a plan for increased law enforcement capabilities at the mancamp and on the highways between the Project site and the communities of Meeker, Rifle and Parachute. CB will also work directly with the Meeker Rural Fire District, the Rifle Rural Fire District, Pioneer Hospital and the Grand River Hospital District to devise a comprehensive plan for fire protection and emergency medical services at the mancamp. CB will assist in supplementing local government manpower and equipment to the extent necessary for the successful implementation of these health and safety programs.

FIGURE 4.3-2

GARFIELD COUNTY JURISDICTIONS

FISCAL ANALYSIS SUMMARY



4.4 SOCIOECONOMIC MONITORING PROGRAM

4.4 SOCIOECONOMIC MONITORING PROGRAM

Because of the many variables and the limitations in the forecasting techniques involved in evaluating the socioeconomic effects of the CB Project, it is important to develop an accurate socioeconomic monitoring program. CB will support a socioeconomic monitoring program designed to track significant socioeconomic data which will provide an accurate picture of the effect of the Project upon nearby communities.

The socioeconomic monitoring program will focus on four distinct areas: characteristics of Project employees, characteristics of the local economy, housing and local government fiscal condition. The monitoring of these four areas should allow for the verification of much of the data presented in the socioeconomic analysis.

4.4.1 CHARACTERISTICS OF PROJECT EMPLOYEES

Specific personal data will be collected on all construction and permanent employees. This data will be collected and presented similarly to the data contained in CB Project socioeconomic monitoring reports from 1978-1981. The data will include the following types of information:

1. Total Project Employment
    - 1.a Construction Employment
    - 1.b Operations Employment
2. Place of Residence
3. Length of Time Residing at Present Residence
4. Previous Residence
5. Length of Time Residing at Previous Residence
6. Age, Sex, Marital Status
7. Household Size
8. Number of School-age Children in Household
9. Type of Housing Occupied
    - 9.a. Owner Occupied
    - 9.b Rental Occupied

This data will be collected from Project employees at the time they accept employment. The data on each individual will then be updated after the first six months of employment and again each year thereafter.

The data will be stored using a computerized data base manager. Reports on the current workforce will be issued on a semi-annual basis. Beginning in mid-1984 these reports will present data aggregated primarily by place of residence. Other aggregations will be provided for comparative purposes such as: type of employment vs. length of local residence and type of employment vs. type of housing occupied. Some time series analysis of the data will also be prepared.

4.4.2 CHARACTERISTICS OF THE LOCAL ECONOMY

Indications of change in the local economy of Rio Blanco and Garfield counties will be monitored. These indicators will include:

1. Total Employment
    - 1.a Basic Employment (Estimated)
    - 1.b Non-basic Employment (Estimated)
    - 1.c Unemployment
2. Personal Income
3. Retail Sales
4. Housing Prices
    - 4.a Rents
    - 4.b Sales
5. Bank Deposits
6. Local Consumer Price Index (Market Basket Survey)

This data will also be accumulated and reported on a semi-annual basis. The local consumer price index will be determined through a market basket survey of prices for consumer goods in local retail outlets. The data will be analyzed on a time series basis through the construction stage of the CB Project.

4.4.3 HOUSING

Local housing conditions will be monitored as part of the overall Project housing program. New housing starts and vacancies will be closely monitored and will be used as a determinant of CB's involvement in stimulating the development of new housing. Other factors which will be tracked include: new subdivision approvals, utility extensions and building permits. Discussions will be held on a periodic basis with local builders and financiers to identify any obstructions which exist to the creation of additional housing.

A report analyzing local housing conditions will be produced on a semi-annual basis.

4.4.4 LOCAL GOVERNMENT FISCAL CONDITION

A monitoring program will be established to identify the direct and indirect effects of the CB Project upon local government revenues and expenditures. To do this the following data will be monitored on an annual basis:

1. CB Project Property, Sales and Use Taxes
2. CB Project Expenditures in the Local Economy
3. Local Revenue Sources
4. Intergovernmental Revenue Sources
5. Operations and Maintenance Expenditures
6. Capital Expenditures

An analysis will be prepared to determine the validity of the local government revenue/cost projections included in the socioeconomic analysis and the validity of the fiscal conclusions of that analysis.

5.0 ENVIRONMENTAL ISSUES

The C-b Lease Environmental Stipulations specify that management plans be developed for fish and wildlife, spills, and rehabilitation (includes reclamation and erosion). It is also required that the rehabilitation plan be updated annually. The objective of these plans is to set forth methods that will be used to avoid and mitigate adverse environmental effects.

CB has developed the required plans as well as plans for several other environmental issues addressed in the Environmental Stipulations. Each environmental control plan contains a description of 1) those Project activities that will affect the environment, 2) associated regulations and permits, 3) programs to avoid or mitigate effects, and 4) anticipated environmental effects after mitigation.

These plans were previously described in detail in the 1976 Detailed Development Plan and are updated in the forthcoming Revised Detailed Development Plan (a draft of which will become available in December 1983). These plans are summarized in the two tables which follow in this chapter.

The plans described below are necessarily in varying stages of maturity. For example, Project development to date has generated waste water; therefore, the water quality control plan has been specified and implemented. The subsidence control plan, however, is preliminary and will not be finalized until commercial mining commences.

The plans identify programs that are or will be carried out. The details of some of these programs are (will be) contained in supportive documents, such as the Prevention of Significant Deterioration (PSD) permit and Mined Land Reclamation Plan permit.

Several years of data gathering and analysis have generated extensive information on potential environmental effects. The key effects and mitigating measures are summarized for construction (Table 5.0-1) and operation (Table 5.0-2), and include the following: (1) the nature or

source of the impact; (2) the mitigating measure to offset the impact; and (3) when applicable, the control effectiveness of air pollution control technologies.

TABLE 5.0-1

Environmental Effects and Mitigation - Construction Phase[1]

Impact Class[2]	Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Air	1. Fugitive dust		
	a. Access road	Road paved (8/78) (Fugitive Dust Permit, 1977)	100% effective
	b. Haul roads	Regular application of water and a palliative (Fugitive Dust Permit, 1977)	- Water - 50% - Palliative - 85%
	c. Earth moving operations and other earth disturbances	Erosion Control and Rehabilitation Plan (6/77, updated 11/80) - Topsoil stockpiling - Revegetation - Irrigation Fugitive dust permit - Water application Mined Land Reclamation Plan (3/78, construction stage only) - Minimizing disturbances - Land reclamation	- Revegetation and irrigation - 100% effective - Water - 50%
	2. Corridor traffic exhaust	Project van pooling or bussing; reduce speed limit	- About 90% of project staff are expected to ride buses during construction and 75% during operations
	3. Temporary power generator exhaust	None (Controls not required on generators with less 1000 hp)	N/A
	4. Cement batch plant dust	Baghouses have been installed (Fugitive Dust Permit)	99.5% effective
Water	5. Effects on surface and ground water resulting from disposal of mine shaft water	Primary measures: - Storage in 2 holding ponds to control sediment and flow - Discharge into East No Name Gulch (NPDES Permit 9/83)[5] Standby measures: Storage in 3rd pond to provide surge control for - - Sprinkling (OSO, Land Application System Plan 1980) - Reinjection (Underground Injection Permit, 8/79)	N/A

TABLE 5.0-1

Environmental Effects and Mitigation - Construction Phase[1] (Continued)

Impact Class[2]		Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Water (Cont.)	6.	Lowering of water table (zone of influence) resulting from mine dewatering. The goal is to protect senior water rights in vicinity of Tract by preventing depletions.	Water augmentation plan (1980)[6] - Monitoring and modeling efforts - Releases to surface stream if required - Reinjection in selected deep wells - Future Powell Park Reservoir or Yellow Jacket Project on the White River and diversion of flows nearby C-b Tract	N/A
	7.	Spills of oil and other hazardous materials	Spill prevention control and countermeasure plan	N/A
	8.	Disposal of domestic sewage	On-site sewage treatment plant (9,000 gal/day) operated in accordance with regulations	N/A
Land	9.	Surface disturbances	(Refer to impact #1c and measures described under Erosion Control and Rehabilitiation Plan and Mined Land Reclamation Plan)	N/A
	10.	Erosion	Erosion Control and Rehabilitation Plan - Sediment basins constructed to contain 25-yr floods and control 100-yr floods - Revegetation	N/A
Ecology	11.	Habitat loss	Fish and Wildlife Plan (June 1977) - Habitat conversion to increase forage productivity to offset losses incurred due to disturbance elsewhere (102 acres converted to date) - Habitat restoration (revegetation)	N/A
	12.	Road kills of wildlife	Fish and Wildlife Plan sets forth several measures (e.g., fencing) that will be implemented if deemed necessary by OSO. Project bussing. Joint road reflector study with Dept. of Wildlife in progress.	N/A
Health	13.	Mine air quality contaminants	Compliance with all MSHA regulations[7]	N/A

TABLE 5.0-1

Environmental Effects and Mitigation - Construction Phase[1] (Continued)

Impact Class[2]	Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Health (Cont.)	14. Mine physical agents	Compliance with all MSHA regulations[8]	N/A
	15. Construction accidents	Surface and underground construction will be accomplished in compliance with all applicable regulations.[9]	N/A

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[1] Unless noted otherwise, this table addresses the major impacts of those construction activities that occur on the C-b Tract before commercial operations commence.

[2] Impact Class describes the environmental medium affected or the topic of the impact.

[3] Mitigating Measure refers to those techniques, regulations, and management and control plans that will ameliorate impacts.

[4] Control Effectiveness is stated only for the air pollution control technologies utilized.

[5] Hearings held by the State WQCC resulted in a combined classification for Piceance Creek that includes the criteria for Class II agricultural use and warm water biota, and Class II recreation.

[6] Cathedral Bluffs monitors water levels in many wells on- and off-Tract. The data are made available annually to the Water Court and other interested parties.

[7] The MSHA regulations that apply are as follows: 30 Code of Federal Regulations (CFR) 57, 5-1, 2, 3, 5, 6, 10, 15, 16 18B, 18D, 18F, 20, 22, 25, 27, 28, 29, 31, 32, 34, 35, 37 through 42, 44 through 47.

[8] The MSHA regulation that applies to 30 CFR 57.5-50.

[9] Accident rates lower than the national average are anticipated. Cathedral Bluffs policies provide for constant efforts to reduce accident frequency.

TABLE 5.0-2

Environmental Effects and Mitigation - Operation Phase[1]

Impact Class[2]		Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Air	1.	Air quality		
		a. Fugitive dust	- Baghouse - Water palliatives - Chemical palliatives - Covered conveyors - Underground conveyors	- 99.5% removal of TSP - 50% suppression of TSP - 85% suppression of TSP - 90% control of TSP - 99% control of TSP
		b. Mine vents	- None at vent	- N/A
		c. Aboveground Retort	Union heaters, boilers - Unisulf - Retort feed baghouse	 - 99.9% H_2S removal - 99.5% TSP removal
		d. Upgrading emissions	- Claus and Low NO_x Burners, fuel gas cleaning	- 98% SO_2 removal - 95.9% NO_x reduction
		e. Tank farm emissions	- Vapor recovery system	- 100% HC collection
		f. MIS Emissions	- FMC double-alkali FGD units	- 98.4% SO_2 removal
	2.	Visibility degradation	- Control is indirect via air quality measures[5]	- Same as air quality control measures
Water	3.	Zone of influence from mine dewatering	(Refer to comments under Impact #6 in Table 5.0-1)	N/A
	4.	Surface and groundwater pollution resulting from mine dewatering and effluent from process streams		

TABLE 5.0-2

Environmental Effects and Mitigation - Operation Phase[1] (Continued)

Impact Class[2]	Nature or Source of Impact	Measures[3]	Control Effectiveness[2]
Water (Cont.)	a. Mine waters	Excess waters treated in settling ponds for pH and suspended solids and discharged under NPDES permit	N/A
	b. Retort waters and process condensate	Process waters and wastewaters will be used for on-site requirements; see c.	N/A
	c. Processed shale leachate	Processed shale pile to be wetted with 10 to 16% water. A ditch to collect any leachate and surface runoff will be cut around spent shale pile during the construction period. The ditch will direct waters to downdip catchment dam for settling and if necessary, treatment. Additional updip diversion structures will be located in the gulch to prevent precipitation runoff from entering the pile. Monitoring groundwater to detect effects, if any.	N/A
	d. MIS Retorts	- Monitoring of groundwater, geologic, and hydrologic conditions to confirm that MIS process operations have no significant effect on quality of nearby groundwater. - Monitoring to confirm chemistry of effluent drainage water from MIS retorts as a function of time after retorting. - Collection of effluent drainage, treatment as necessary, and use of feedwater. - Further characterization of MIS processed shale.	N/A
	e. Effects on surface and groundwater from disposal of mine shaft water.	(Refer to comments under Impact #5 in Table 5.0-1)	N/A
	5. Spills of oil and other hazardous materials	(Refer to comments under Impact #7 in Table 5.0-1)	N/A

TABLE 5.0-2

Environmental Effects and Mitigation - Operation Phase[1] (Continued)

Impact Class[2]		Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Land	6.	Disposal of domestic sewage	(Refer to Impact #8, Table 5.0-1)	
	7.	Potential disposal of hazardous wastes	The project may produce wastes and handle materials that are classified as hazardous. Wastes will be disposed of at approved disposal facilities off-site by approved contractors in accordance with requirements of the Resource Conservation and Recovery Act.	N/A
	8.	Disposal of retorted shale	Mined Land Reclamation Plan and Procedures. - Revegetation - Contouring terrain, but topography permanently altered (1095 acres ultimately)	N/A
	9.	Susbidence	Non-subsiding mine design, and monitoring[6]	N/A
	10.	Surface disturbances	(Refer to Impact #1c, Table 5.0-1, and measures described under Erosion Control and Rehabilitation Plan and Mine Reclamation Plan)	N/A
	11.	Erosion	(Refer to comments under Impact #10, Table 5.0-1)	N/A
Ecology	12.	Wildlife habitat loss and road kills	(Refer to comments under Impact #11 and #12, Table 5.0-1)	N/A
Health and Safety	13.	Dust generation from mining operations	Dust control program. Wetting or use of dust palliative in haulage tunnels[7], working face wetting, water screens, proper ventilation	N/A
	14.	Chemical vapor generation from AGR process	Use BACT to minimize any emissions and apply appropriate work practice and personal protective equipment controls if necessary to assure personnel exposure levels below applicable TLVs (8)	N/A

TABLE 5.0-2

Environmental Effects and Mitigation - Operation Phase[1] (Continued)

Impact Class[2]		Nature or Source of Impact	Measures[3]	Control Effectiveness[4]
Health & Safety (Cont.)	15.	Noise from fans and mining equipment	Specify BACT before equipment is purchased and retrofit other equipment as necessary. Main vent fans will be located on the surface with booster fans underground, all fans will be specified to have the lowest feasible noise generation. Hearing protection used in noise hazard areas.[9]	N/A
	16.	Radiation exposure	MSHA has taken measurements at the C-b Tract and found no radon daughters present.[10]	N/A
	17.	Diesel emissions during underground operations	Use best available emission control technology along with a good preventive maintenance program and adequate ventilation.[11]	N/A
	18.	Ground Control	Use modern ground control techniques and equipment consistent with 30 CFR 57.3-20 and other applicable standards.[12]	N/A
	19.	Fire Prevention and Control	Provide best available fire control equipment, procedures, and training as specified by Lease and 30 CFR 57.4. Maintain on-site surface and underground mobile fire fighting equipment and trained operating personnel.[13]	N/A
	20	Safety programs	The Safety Program will exceed all mandatory requirements and will receive full management support and participation.	N/A
	21.	Chemical vapor generation from MIS retorting	The MIS retorts are operated under negative pressure so that vapors cannot enter the Mine.	N/A
	22.	Burning underground	MSHA exemption to be obtained, mitigate in accordance with MSHA requirements, control burning rate through process control measures.	N/A

TABLE 5.0-2

Environmental Effects and Mitigation - Operation Phase[1] (Continued)

[1] This table addresses the impacts that would result from commerical operation that occur after initial construction activities are concluded.

[2] Impact Class describes the environmental medium affected or the topic of the impact.

[3] Mitigating Measure refers to techniques, regulations, and management and control plans that will ameliorate impacts.

[4] Control Effectiveness is stated only for air pollution control technologies utilized.

[5] The project will cause a minor impact on visibility. It is estimated that visibility will be degraded by 1.5%. The measured pristine visual range of 130 kilometers will therefore be reduced by 2 kilometers.

[6] Mine pillars will shorten in response to increase stress but the effects on the surface will be unnoticeable and aquifers will not be disrupted.

[7] A dust control program will be developed as a part of the Cathedral Bluffs Occupational Health Program.

[8] Sometimes processing facilities experience upset conditions due to equipment failure of other factors; higher than normal emissions may result for a brief period.

[9] A noise control plan will be developed as a part of the Cathedral Bluffs Occupational Health Program.

[10] Monitoring for radon daughters will be continued according to MSHA regulations even though initial measurements showed none were present.

[11] A diesel exhaust monitoring program will be included as a part of the Cathedral Bluffs Occupational Health Program.

[12] Operating experience on similar ground conditions at the Logan Wash mine will benefit the CB Program.

[13] Fully trained and equipped mine rescue terms will be available for mine emergency situations.

6.0 STATUS OF REGULATORY COMPLIANCE

All permits required to commence construction have been obtained. Those needed to complete construction and operate the Project have been reasonably scheduled in accord with the CB Project master schedule. The inventory of major permits is as follows:

	Current	Future	Total
Air	35	6	41
Water	39	12	51
Land/Waste/Etc.	21	17	38
TOTAL	95	35	130

The status of each of these current permits is set forth on Table 6.1-1; that for the future permits is set forth on Table 6.1-2.

Copies of the following major recent permits are enclosed with this document under serarate covers:

1. The most recent EPA PSD air permit;
2. The most recent Colorado Water Quality Control Commission NPDES permit.

In addition, two major permits/documents are to be issued in the near future and will be forwarded at that time:

1. Mined Land Reclamation Permit (expected issuance 1/84);
2. C-b Tract Detailed Development Plan for the Oil Shale Office (expected issuance 12/83).

TABLE 6.1-1

C-b PERMIT STATUS REPORT
CURRRENT PERMITS/NOTICES

Permit Title	Purpose	Permitting Agency	Permit No.	Date Submitted	Date Approved	Date of Expiration	Remarks
Air							
1) PSD	For Ancillary Development of 5000 B/D MIS facility	EPA	N/A	10/17/77	12/15/77	N/A	Construction commenced 1978.
2) PSD Amendment	Added 12,000 B/D AGR 13,000 B/D OUG	EPA	N/A	12/29/82	9/26/83	N/A	
3) APENs (25)	AGR/OUG	CAQCD	82RB410 (1-25)	12/29/82	10/15/83	N/A	
4) Fugitive Dust Permit	Surface disturbance for construction of shafts & support facilities	CAQCD	C-11,454 (FD)	6/27/77	12/28/77 Rev 8/05/80	Indefinite	Permit stipulations are based on Ancillary construction phase.
5) Emission Permit	Concrete Batch Plant	CAQCD	C-11,931	5/18/78	6/23/78	Indefinite	
6) Open Burning Permit	Dynamite disposal	CAQCD	1860-0B-0004	2/83	3/83	4/84	Permit has annual renewal requirement.
7) Emission Permits (4)	Natural gas generators	CAQCD	C-12,255 (1-4)	12/04/78	3/15/79	Indefinite	
8) Emission Permit	Feeder Breaker	CAQCD	C-13,244 (FD)	3/06/81	4/20/81 (State) 5/18/81 (EPA)	Indefinite	

TABLE 6.1-1
C-b PERMIT STATUS REPORT
CURRENT PERMITS/NOTICES

Permit Title	Purpose	Permitting Agency	Permit No.	Date Submitted	Date Approved	Date of Expiration	Remarks
Water							
1) NPDES	Water discharge to Piceance Creek	CWQCD	CO-0033961	8/19/77	3/27/79		
				Rev. 6/30/80	12/1/80		
				New appl. 6/30/82	9/30/83	3/31/88	
2) SPCC	To comply with the Clean Water Act	CWQCD, OSO, EPA		11/79	Not required	Update required every 3 years	Revision submitted 5/83.
3) Water Augmentation Plan	Depletion mitigation	Water Court	W-3492	8/31/77	5/21/79	Project Life	Detailed plan of augmentation due 4/85. Also petitioned to amend monitoring plan. Due diligence filing on ground water rights filed 4/83.
4) Well Permits (34)	Covers permits for 29 wells and 5 shafts filed under Augmentation Plan for any beneficial use.	State Engineer	W-3493	8/31/77	5/21/79	N/A	
5) Sewage Plant Site Approval	Sewage plant	CWQCD	Site 2852	8/06/80	8/28/80		Site transferred to existing package plant.
6) Sewage Plant	Sewage disposal	CWQCD	Site 2852	9/22/80	11/03/80	Indefinite	

TABLE 6.1-1
C-b PERMIT STATUS REPORT
CURRENT PERMITS/NOTICES

Permit Title	Purpose	Permitting Agency	Permit No.	Date Submitted	Date Approved	Date of Expiration	Remarks
Land							
1) Lease	Tract C-b development	USGS/OSO	C-20341		4/74	4/96	Annual lease payment made 3/25/83 for 4/1/83-3/31/84. Annual Report submitted to OSO 4/30/83.
2) DDP & MDDP	Lease compliance	USGS/OSO	N/A	2/77	8/77	Life of Lease	1983-84 Interim Plan approved 2/23/83.
3) Monument Peak Right-of-Way	Microwave communications	BLM	C-25677	7/31/77	10/20/77	Indefinite	Annual rental payment due 10/83.
4) Road Right-of-Way	Construct access road	BLM	C-15827 RW	9/13/77	1/24/78	Indefinite	
5) Notice of Prospecting	Site preparation and shaft sinking activities	CMLRB		3/77	Not required		
6) ROW/SLUPS (3)	Monitoring wells and access roads for SG-18, 19,21,A5A,Federal 2-B, TG2-3,TG2-1,71-3,71-5	BLM	CO-010-P- WR-83-16-(Wells)	3/83	6/15/83	6/15/86	Annual payment required.
			C-36377 (Road ROW)		7/5/83	Until relinquished	
7) Mined Land Reclamation Plan	Surface disturbance reclamation	CMLRB	77-530	11/07/77	3/23/78	Life of Project	Covers MIS development and 710 acres surface disturbance. Amendment required for AGR spent shale disposal prior to startup of AGR processing. Annual reclamation report and fee submitted 3/16/83.
8) Special Use Permit	Permanent zoning	Rio Blanco County		10/10/78		Indefinite	Follows original DDP, includes AGR. Status confirmed by resolution 7/5/83. Impact analysis will be included in 1983 Major Development Permit action for addition of OUG and construction housing.
9) Power Utility Corridors	Power lines	Rio Blanco Co BLM/White River Electric's	#C-26839	6/2/78		N/A	138 KVA White River Electri[illegible]ne (constructed) will serve pro[illegible]t.

TABLE 6.1-1
C-b PERMIT STATUS REPORT
CURRENT PERMITS/NOTICES

Permit Title	Purpose	Permitting Agency	Permit No.	Date Submitted	Date Approved	Date of Expiration	Remarks
Solid Waste							
Resource Conservation and Recovery Act (RCRA)							
1) Notice of hazardous waste activity	Generate & ship hazardous waste	EPA	EPA ID# COD 000 716530	8/18/80	N/A	N/A	There are no current hazardous waste activities.
Other							
1) FCC Licenses (5)	Microwave communications	FCC	WAM282 WAM283 WCR356 WCR357	5/31/77	8/02/77	12/5/83	Renewal action needed 90 days prior to expiration date.
	Radio Station License to operate Citizens Band Radios	FCC	KE9476			11/23/87	
2) Notice to FAA of Proposed Construction	Structures over 200 ft	FAA		8/18/78	None Required	N/A	Proper notification made. No further action needed.
3) Heliport Location	Heliport construction	DOI/OSO, FAA		11/8/79	N/A	N/A	
4) Radioactive Materials License	Operate neutron moisture probe for soil moisture monitoring spinkler plots.	Colo.Dept. Health	Colo 437-01	5/01/80	6/28/80	6/31/85	Source to be tested every 6 months. Source tested 3/83.
5) TSCA-Inventory of Chemical Substances	Registration of shale oil	EPA	N/A	4/26/78	N/A	N/A	Shale oil is on the inventory of existing chemical substances.

TABLE 6.1-2
C-b PERMIT STATUS REPORT
FUTURE PERMITS/NOTICES REQUIRED

Permit Title	Purpose	Permitting Agency	Permit No.	Date Permit Required	Target Submission Date	Date Submitted	Remarks
Air							
1) PSD Amendment	o Amend BACT for MIS/SPF	EPA, CAQCD	N/A	5/85	3/84		Amendment will be made to cover MIS/SPF changes. Issue permit appeared
2) Air Pollution Emission Notices (5)	o Construct MIS/SPF facilities	CAQCD		5/85	3/84		Additional APENs for MIS/SPF will be required.
Water							
1) Underground Injection Control Permit (UIC) (2)	o Injection of mine water. o Operation of in situ retorts	CWQCD		7/87	7/86 or sooner		Pending the establishment of a State program.
2) 404 Dredge & Fill (3)	Water diversions and dams, stream crossings	EPA, U.S. Corps of Engineers		Prior to Construction			Cover const. of CB water supply diversions & dam.
3) Dam Construction (2)	To construct reservoirs	Rio Blanco Co., OSO, USBM, State Engineer		Prior to Construction			Would cover Hatch Gulch and Willow Creek Reservoirs.
4) Well Permits (5)	Reinjection and monitoring	State Engineer, UIC, CWQCD					Possible future regulation may occur under State UIC program, if adopted.

TABLE 6.1-2
C-b PERMIT STATUS REPORT
FUTURE PERMITS/NOTICES REQUIRED

Permit Title	Purpose	Permitting Agency	Permit No.	Date Permit Required	Target Submission Date	Date Submitted	Remarks
Land							
1) Mined Land Reclamation Plan Revision	o Revisd Plan o Reclaim processed shale	CMLRB		) 7/87	1/84		Updates and major revisions adding reclamation of processed shale will be prepared in parallel with submittal of Revised Detailed Development Plan. Construction can take place under existing permit.
2) Rights-of-way(2)	Product and Water pipelines	BLM		1986	1/85		
3) Utility & Pipeline Corridors Agreement	Establish acceptable corridors before applying for right-of-way	Rio Blanco Co. BLM,		1985	1984		The LaSal EIS covers general corridor for product pipeline to Rangely. Initial meeting was held with County Corridor Committee 6/16/83. BLM is currently preparing a Regional Management Plan & EIS that will cover other corridor options.
4) Major Development Permit (Final Application)	Adds OUG & CB Site Temporary const. housing.	Rio Blanco Co.		10/84	11/83		Impact analysis to cover total project to be submitted. Status covered by County Commissioners Resolution 7/83.
5) Special Use Permit	Adds offsite product pipeline	Rio Blanco Co.		3/86	7/84		Same as above.
Solid Waste Disposal							
1) RCRA	Any hazardous/toxic waste disposal storage or treating.	EPA/RCRA CDH	Regulations not in place. Some potentially hazardous materials will be stored on site. Spent catalyst from OUG will be shipped to mfr. for reprocessing.				
2) Solid Waste Disposal Permit	Disposal of processed shale or solid waste on tract.	CDH/EPA Rio Blanco County	No regulation as yet in place that would require a permit, however is likely by 1988. Ample time is available to participate in development of regulation and obtain permits if any required. Project construction and trash wastes will be hauled off tract and disposed in county land fill.				

TABLE 6.1-2

C-b PERMIT STATUS REPORT

FUTURE PERMITS/NOTICES REQUIRED

Permit Title	Purpose	Permitting Agency	Permit No.	Date Permit Required	Target Submission Date	Date Submitted	Remarks
Solid Waste Disposal (Contd)							
3) Sewage Plant Permit	Sewage disposal for permanent facilities.	CWQCD			1/84		For commercial needs.
4) Sewage Plant Site Approval	Sewage Plant	CWQCD			1/84		For commercial needs.
General							
1) DDP Revision	Revise Mining Plan/MIS emissions and Controls. Add AGR/OUG facilities.	DMM-OS	N/A	7/84	11/83		Work commenced 6/83.
Other							
1) PMN	Oil upgrader products in commerce (Hydro-treated shale oil)	EPA/TSCA		3/87	1/87		Discussions initiated with EPA 7/83 to determine requirements for CB PMN.
2) Petition for Modification to 30 CFR 57.4-58	Retort operation (MIS)	MSHA		Prior to ignition	4/84	12/81	MSHA proposed std. is expected to negate need for this petition.
3) Petition for Modification to 30 CFR 57.21-78	Use of non-permissible equipment	MSHA		7/84	1/84		There will be several equipment lists phased to near term mine operations that will require petitions. The number is not yet determined. The petition listed here with dates is the first.
4) Restaurant	License to operate	Colo. Dept. Health					
5) Permit not to use coal in boiler having heat input of >50 x 106 BTU/hr	Conserve oil & gas	DOE				10/30/78	Need to confer with DOE when plans are firm for facilities.
6) Underground Diesel	Operate diesel equipment	CBM					